INSIDE: WHY WE HATE HOUNDSTONGUE

Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS | NOVEMBER-DECEMBER 2021

MARTENS COME HOME

IN THIS ISSUE:

MOUNTAIN LIONS ON THE MOVE

IS THAT A ROUGH-LEGGED HAWK?

WHAT CAN COME OF KNOCKING ON A DOOR

CHIEF PLENTY COUPS'S HISTORIC D.C. DEDICATION

Montana Outdoors

FIRST PLACE MAGAZINE:
2005, 2006, 2008, 2011, 2017, 2018
Association for
Conservation Information

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Montana Outdoors

NOVEMBER–DECEMBER 2021

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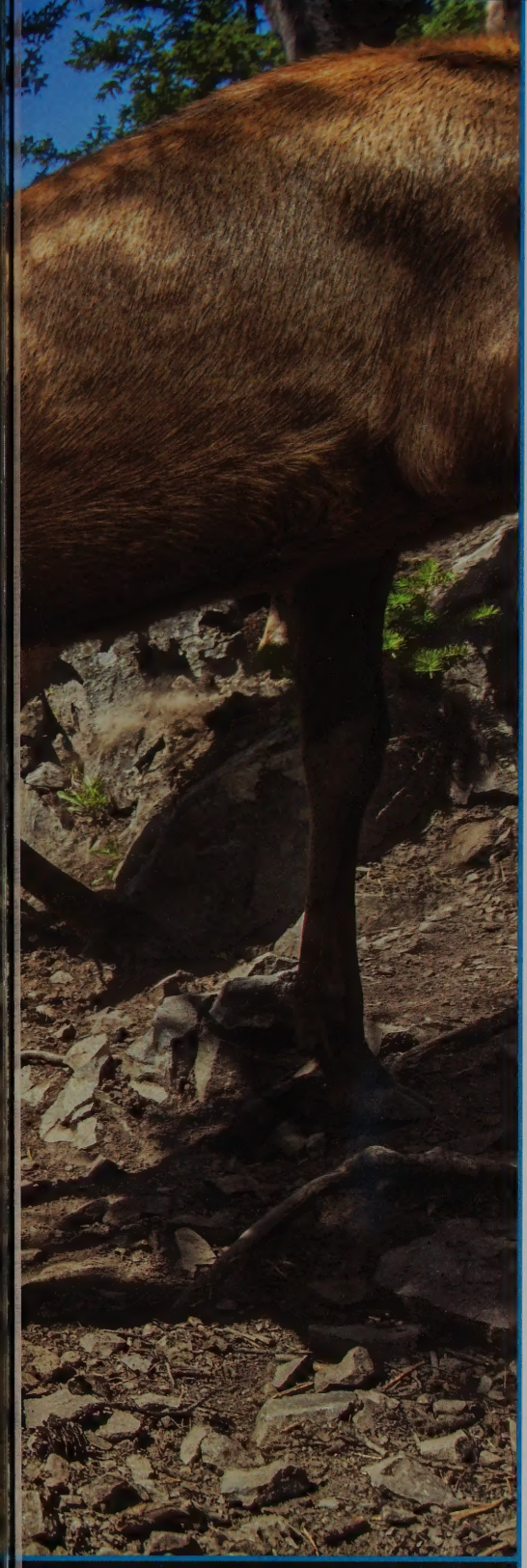


ARDUOUS JOURNEY A trail camera captures an elk calf struggling on a fall migration in the Greater Yellowstone Ecosystem. Learn more about the necessary movements of elk and other wildlife on page 22. Photo by Joe Riis.

FRONT COVER See page 12 to learn how FWP and members of the Montana Trappers Association are bringing martens back to the Little Belt Mountains after a 100-year absence. Photo by Jeremie Hollman.

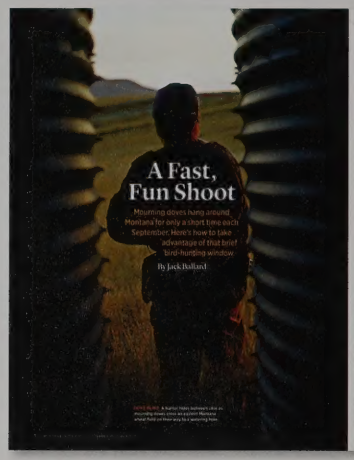
Mourning doves return

As a Block Management participant, I enjoyed reading your article about hunting doves ("A Fast, Fun Shoot," September-October). Fifty-seven years ago, I married a Montana guy and we moved into a little rural homestead house with an established shelterbelt of trees. I enjoyed the mourning doves every day as I worked in the garden. They built little nests on a limb low enough to observe the eggs. We also had many hummingbirds and songbirds migrate through every year. Then six years ago the Eurasian doves moved in. They drove away the mourning doves, orioles, and other songbirds. I finally found a hunter who helped me control those invasive doves, and I have been delighted to hear mourning doves and see hummingbirds nesting here again this year.

Arlene J. Harris
Fairfield

When will they be delisted?

Thank you for the article displaying the different ups and downs that wildlife face and how FWP is monitoring them ("Tracking Wildlife's Ups and Downs," September-October). I would love to see an article elaborating more about the grizzly bear numbers. According to the map shown, the U.S. Fish & Wildlife Service should agree that grizzly bear numbers have been restored to federal recovery goals in the Northern Continental Divide Ecosystem. What needs to happen next to remove them from the endangered species list and allow state control? How many bears are euthanized each year for whatever reason, and how many grizzly bears are relocated each year within the NCDE? I'm curious if it would make more sense to


A Fast, Fun Shoot
Mourning doves hang around Montana for only a short time each September. Here's how to take advantage of that brief bird-hunting window.
By Jack Ballard

The haunting *who-OOO-ooo-ooo-ooo* melody of a male mourning dove may sound sorrowful to the human ear. But the song is actually a mating call, a harbinger of life, not loss. A better rendering of the comely bird's name in relation to its voice would be "courting dove."

allow hunting to help control numbers, generate revenue, and reduce the cost for the state of having to pay someone to control or relocate nuisance bears. Bears can be a touchy subject to individuals who don't hunt or understand carnivore management. I would like to see an article answering some of these questions and what we can expect to see in the future and in what kind of time frame.

Kyle Reedy
Great Falls

KEN MCDONALD, head of the FWP Wildlife Division, replies: Recently the USFWS completed a status review for grizzly bears in the Lower 48 and determined that the population should remain listed as federally threatened. However, as part of the analysis, they found that the NCDE ecosystem met the requirements that the habitat is healthy and abundant; the NCDE population is kept at or above a viable size and is well distributed within the ecosystem; and current and future resiliency of that population is high. Bears in the NCDE meet the recovery criteria established for the NCDE in the federal grizzly bear recovery plan. Despite this, the USFWS has made no attempt to designate the NCDE as a distinct population segment or delist it.

> **"The USFWS determined that the population should remain listed.**

EDITOR also replies: In the November-December 2016 issue of Montana Outdoors, *we ran an article making a case for delisting grizzly bears in Montana. Read it at issuu.com/montanaoutdoors/docs/grizzlydelisting.*

Red barn family member

Thank you for sharing the fantastic story of the North Shore Wildlife Management Area and the McClarty barn ("The Birds and the Barn," July-August). Joe and Kate McClarty were my great-grandparents, and I have often thought of their life and how they survived without bathrooms, even while Kate gave birth in that house. The barn featured in your article was built by Joe, his boys, Homer and Percy, and many neighbors. Kate and her daughter, Alma, cooked for the crew.

Donetta McClarty Antonovich
Kalispell

Lead proponent

Regarding your article "Choosing the Unleaded Option" (September-October 2020), I am a longtime member of the Rocky Mountain Elk Foundation, a life member of the NRA, and have been inducted into the Pennsylvania Trappers Hall of Fame. Using lead shot, I have taken moose, bear, elk, deer, turkey, and small game, and consumed it all. We have more eagles in Pennsylvania than ever. How many raptors are killed by windmills? If a person elects to use something other than lead, that's his or her opinion. The antis against gun ownership say if they can't get our guns, they will target the shells or bullets.

Leopold M. Philippe
Beech Creek, PA

Ask hikers for sightings

I just read your interesting article "Tracking Wildlife's Ups and Downs" and it got me thinking. Every summer, hundreds of backpackers hike the Continental Divide Trail. It goes from New Mexico to Canada and is 3,100 miles long, 700 miles of which go through Montana. These folks are acutely aware of wildlife, especially bears. I believe they would be a wonderful source of information regarding where, when, and what kind of bears were spotted on their travels through Montana's portion of the Rocky Mountains. These hikers could be reached on the Continental Divide Trail Facebook Group Page.

Dana Bauer
Butte

Speak your mind

We welcome all your comments, questions, and letters to the editor. We edit letters to meet our needs for accuracy, style, and length. Write to us at Montana Outdoors, *P.O. Box 200701, Helena, MT 59620-0701. Or email us at: tdickson@mt.gov.*

Venison Loin with Sage, Squash, and Prunes

Preparation time: 30 minutes | Cooking time: 40-45 minutes | Serves 4

The idea for this "Tasting Montana" column began in the mid-1990s following publication of a report by Yale University researcher Stephen Kellert on public attitudes toward hunting. Kellert found that the top reason nonhunters support hunting is when it is done to produce food, and the main reason they don't support it is when the primary goal is to obtain a trophy.

At the time almost all hunting magazines and videos showed hunters posing with their large-antlered trophies, which sent a message that hunting is about conquest and bragging rights. Almost no media were covering the pleasures that come from turning wild game into delicious meals. It seemed odd to me that the hunting community and state wildlife agencies weren't doing more to promote game meat consumption and thus build more support for hunting among the nonhunting public.

Also puzzling was the fact that, considering the millions of deer, ducks, and pheasants harvested each year nationwide, there weren't better guides to cooking wild game meat. Back then almost all game cookbooks featured unappetizing snapshots of dishes that too often relied on a can of cream of mushroom soup.

But increasingly over the past 25 years, writers and chefs have filled that void. Foremost are the prolific cookbook author and *Hunter Angler Gardener Cook* website creator Hank Shaw, *Field & Stream*'s Wild Chef columnist Jonathan Miles (who first published the original version of the recipe at right), and the Bozeman-based MeatEater TV show and podcast host Steven Rinella. Today anyone can find scrumptious game and fish recipes from dozens of books and countless YouTube videos.

The purpose of this "Tasting Montana" page is to provide our readers with the most delicious of the growing number of recipes, especially those that can be prepared on weeknights for people with busy schedules.

I don't know if reading this page increases support for hunting among the *Montana Outdoors* subscribers who don't hunt. But at least they can see the passion so many of us have for what we bring home from the field and put on the table.

—Tom Dickson is the editor of Montana Outdoors.

INGREDIENTS

Kosher salt and freshly ground black pepper
½ t. ground allspice
¼ t. ground star anise
¼ t. cinnamon
6 T. vegetable oil
4 venison loin steaks, 6-7 oz. each
Packed ¼ c. finely chopped prunes
2 T. cognac (optional but highly recommended)
6 T. unsalted butter, softened at room temperature and cut into tablespoon-size pieces
2 c. peeled and finely diced butternut squash
10 fresh sage leaves, minced

DIRECTIONS

In a bowl, stir together 1½ t. salt, ½ t. pepper, allspice, star anise, and cinnamon. Whisk in 2 T. oil. Rub mixture onto both sides of each venison loin. Put prunes in a bowl.

If using cognac, pour over prunes and set aside to soak. Preheat oven to 350°F.

In a sauté pan, heat 2 T. oil and 2 T. butter. Add squash and cook, stirring frequently, 15–18 minutes. Toss in prunes. Remove pan from heat and season generously with salt and pepper. Remove squash-prune mixture from pan and keep warm.

Heat at medium-high 2 T. each of oil and butter in a small ovenproof pan. When butter starts to sizzle and foam, add venison loins and sear for 1 minute. Turn them over and transfer pan to the oven. Roast until an instant-read thermometer inserted in the center of a loin reads 130°F for medium rare. Remove pan from oven and transfer venison to a board. Let rest 3-4 minutes.

Meanwhile, heat original squash pan over medium-high heat. Add remaining 2 T. butter and cook 1 minute until it starts to brown and foam. Remove pan from heat and stir in sage leaves. When they get crispy, scoop them out and set aside.

Divide squash-prune mixture evenly among dinner plates. Top each portion with a venison loin, a drizzle of brown butter, and a sprinkle of crisped sage. ■

Montana wolf management

This past summer our department leadership held public meetings across Montana to hear what people have to say about FWP and the fish, wildlife, state parks, and outdoor recreation we manage and conserve.

People asked us about hunting access, elk shoulder seasons, walleye catch rates, grizzly bears, mountain lions—you name it. Some of the most passionate comments and discussions concerned wolves.

One sentiment I heard at the meetings was that the new harvest regulations recently approved by the Fish and Wildlife Commission will result in the "slaughter" or even "extinction" of wolves in Montana. That won't happen.

The commission voted to increase wolf harvest by allowing snaring statewide and night hunting on private land. These are new policies in Montana's wolf management scheme. They were deemed necessary by the trustees of Montana's public trust to increase wolf harvest and reduce the population of these large carnivores to a sustainable level, as provided in statute.

In 2002 Montana's wolf population exceeded a revised federal "buffer" goal of 150 wolves. Today the population is roughly 1,200—greatly exceeding the federal target.

After 66 wolves were introduced to Yellowstone National Park by the U.S. Fish & Wildlife Service in 1995-96, the wolf population in Montana began growing exponentially. By 2001 it reached the first federal recovery goal of 100 wolves. The next year it exceeded a revised federal "buffer" goal of 150 wolves. Today the population is roughly 1,200—greatly exceeding the federal target.

Even though our five regional wolf management specialists help reduce wolf conflicts on livestock operations, such as by installing electric fencing and fladry (flagging) deterrents, most legislators and fish and wildlife commissioners believe the population is too high and that previously approved methods have proved inadequate to manage populations.

Some people don't like the idea of trappers using snares on wolves—or any type of trap. But Montana law allows snaring and trapping of many different animals, including coyotes and furbearers.

Wolves are thriving in Montana. Since 2011, when the species was removed from federal protection and the state began allowing hunting and trapping, the population has stabilized. In recent years hunters and trappers, along with federal agents responding to livestock depredation, have taken roughly 350 animals annually while the population has remained steady. Wolves are prolific, have few natural enemies, and are extremely difficult to hunt or trap. In addition, policy safeguards are in place to ensure the population remains at sustainable levels.

If the new harvest methods result in a harvest topping 450 wolves, the Fish and Wildlife Commission will immediately engage in a review with the potential for rapid in-season adjustments. Hunters and trappers must report taking a wolf within 24 hours of harvest, so we can track what is happening in nearly real time. FWP, for its part, will provide commissioners with data and recommendations for possible season revisions to ensure the viability of the wolf population. Thus, as these latest harvest policies are carried out, provisions have been established to protect wolf populations.

I'm glad Montanans shared their views about wolves and other topics at our regional meetings this past summer. I continue to invite comments and questions about this agency and its role in managing the state's fish, wildlife, state parks, and other outdoor recreation. As has been the case throughout FWP's 121-year history, some people may not agree with all the actions our agency is directed to take. But I want everyone to understand why we do what we do.

—**Hank Worsech**, Director, Montana Fish, Wildlife & Parks

SHUTTERSTOCK

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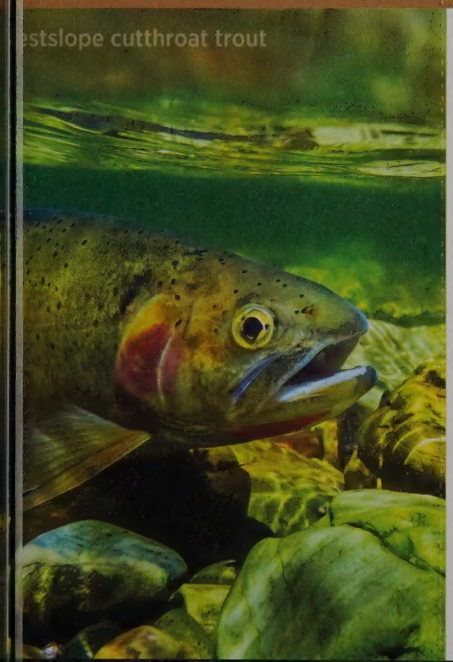

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TOMMY MARTINO

ACCESS ENABLER

KENDRA MCKLOSKY
Regional Hunting Enhancement Coordinator, Missoula

NOW IS THE PEAK SEASON for me and the seven seasonal FWP hunting access technicians I supervise here in Region 2. During hunting season, the technicians are out all day, every day, across western Montana talking with Block Management Program landowners and maintaining over 250 Block Management Area (BMA) sign-in boxes to make sure they have maps. They also collect sign-in coupons, check harvested game on BMAs, and do everything they can to help hunters navigate the landscape and find hunting access. These technicians are basically living, breathing hunting atlases. One of their most important jobs, along with acting as the face of the agency, is to show hunters how to use FWP resources, like the hunting regulations booklets and the FWP Hunt Planner, so hunters can figure out things on their own.

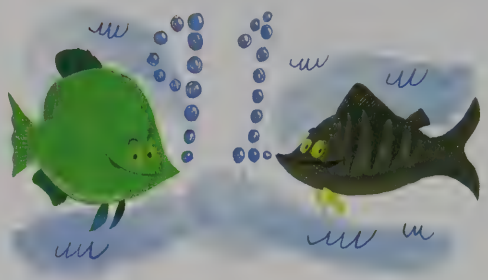
Meanwhile, in our Missoula regional headquarters, Tyler Rennfield, FWP hunting access resource specialist, is taking hunting access reservations and answering a steady stream of access-related questions on the phone and in person, all while maintaining the office work the program requires during hunting season.

This time of year, I provide a field-level response to issues around the region and troubleshoot for the technicians if they are bonkers busy, need a day off, or have a problem they can't handle. We have our share of rough days, but we also get to see kids beaming over their first deer or elk, so it all balances out.

Starting in mid-December and lasting through winter, my focus shifts to program summarization, reporting, and planning. In spring we start up again for wild turkey and bear hunting seasons and begin setting up Block Management landowner contracts to provide hunting access the next fall.

I grew up on a horse ranch near Whitehall, worked on a handful of ranches while going to the University of Montana, and worked seasonally patrolling a couple of large ranches during hunting season. I'm a hunter myself, and I love being outside working directly with people and helping solve problems on the ground. It feels as if someone took my entire skill set and built this job specifically for me.

Photographer **Karl Kreiger** regularly cruises back roads between his home in Helena and Great Falls, keeping an eye out for wildlife. In February of 2020, while driving near Cascade, he spotted this short-eared owl perched on a fence post. Pulling off the road and staying a respectful 40 yards away, he took several shots from his vehicle with a 600 mm lens. "I see short-eared owls around that area a lot, and in winter they can be pretty tame and often won't fly off," says Kreiger, who works as a health care fraud investigator with the U.S. Department of Justice. "What I like about this shot is that the owl—or maybe the wind—has puffed out its feathers, making it look a lot fuller than they usually appear," he says. "Then there's those eyes and talons, which together give the owl a look of incredible intensity."



91 Number of fish species in Montana (76 native and 15 non-native).

Montana Outdoors honored for fish and wildlife articles

Montana Outdoors won three awards at the Association for Conservation Information (ACI) annual awards ceremony held virtually on July 28.

The Montana Fish, Wildlife & Parks magazine took first place in the wildlife article category for "Choosing the Unleaded Option," on the harm to golden eagles and other scavenging raptors from lead bullet fragments in elk and deer gut piles. Winning first place in the fisheries article category was "Has Catch-and-Release Gone Overboard?" (below), which examined the pros and cons of releasing fish. Second place in the same category went to "Awesome Opportunities," detailing the vast diversity of fishing recreation in Montana.

ACI is a nonprofit organization of communicators working for state, federal, and private conservation agencies and organizations. ■

Has Catch-and-Release Gone Overboard?
The case for harvesting trout

Seldom-seen scenery on the lower Yellowstone

OUTDOOR RECREATION

Lower Yellowstone recreation efforts under way

The lower Yellowstone River is one of Montana's last untapped recreation treasures. This longest free-flowing river in the contiguous United States flows past scenic limestone bluffs and stands of towering cottonwoods that were saplings when the Corps of Discovery passed in 1806. The lower river, from Billings to the North Dakota border, provides excellent fishing for sauger, walleye, channel catfish, and smallmouth bass and miles of scenic kayaking and canoeing. Deer, songbirds, and raptors thrive along the banks and in the surrounding countryside. The region is also rich in Native American landmarks and paleontological discoveries. Save for the occasional jetliner contrail crossing the sky, much of the scenery remains remarkably unchanged from 200 or even 2,000 years ago.

"This beautiful corridor has enormous recreational and economic potential," says Angie Grove, chair of the new Lower Yellowstone Advisory Committee and former chair of the Montana State Parks and Outdoor Recreation Board. "I'm asking my fellow committee members to dream big."

Developing the infrastructure necessary to allow more people to fish, boat, hike, birdwatch, and otherwise enjoy the lower Yellowstone will be challenging. Towns and amenities are few and far between. Many roads are remote and often impassable in wet weather. Fishing access sites have been obliterated by spring floods carrying massive ice flows that tear out concrete ramps, pit latrines, and parking lots.

"Whatever is built will need to withstand what nature doles out," says Brad Schmitz, Montana Fish, Wildlife & Parks regional supervisor in Miles City. "And in this part of Montana, nature can be quite unforgiving."

Yet progress is being made. The 2021 Legislature provided FWP with $4 million to protect fish and wildlife habitat, establish more river access, and develop other recreation infrastructure such as interpretive trails and campgrounds along the lower Yellowstone. Those dollars could leverage additional millions in federal fish and wildlife funds.

Providing guidance to FWP on how to spend the funds is the new 12-person citizen advisory committee convened by the department and sponsored by Governor Greg Gianforte. It will advise FWP and others on setting priorities for access, habitat, and infrastructure projects by setting broad criteria for evaluating proposals. Members represent local landowners, business owners, anglers, historians, and others.

The committee will build on work done over the past two decades by FWP and business interests to enhance access along the lower river corridor.

"We're real excited about the potential for improving recreational access to this region," Schmitz says. "Infrastructure projects can take years to carry out, and we're diving in and moving things along as quickly as feasible." ■

CLOCKWISE FROM TOP LEFT: MIKE MORAN ILLUSTRATION; NATHAN COOPER

INDOOR RECREATON

Recommended reading

The best nonfiction books that crossed our desk in 2021

Six Hundred Generations: An Archaeological History of Montana

By Carl M. Davis

The story of Montana's long indigenous human history, from the first people to arrive in this region, following mammoths, to current conflicts over oil and gas drilling in the spiritually significant Badger-Two Medicine area southeast of Glacier National Park.

Encyclopedia of Insects

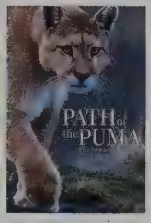
By Jules Howard. Illustrations by Miranda Zimmerman

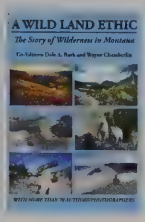
A clearly written and beautifully illustrated guide to more than 300 insects, from the cutest to the deadliest.

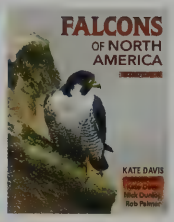
Path of the Puma: The Remarkable Resilience of the Mountain Lion

By Jim Williams

A look at the future of mountain lions in the American West and South America's Patagonia region, including the challenge of restoring the large carnivores to areas increasingly populated by humans.







The Fox and I: An Uncommon Friendship

By Catherine Raven

A memoir of the real-life relationship between a woman who had recently earned her PhD in biology at Montana State University and a persistent red fox that lived nearby in an area next to Yellowstone National Park.

A Wild Land Ethic: The Story of Wilderness in Montana

Co-edited by Dale A. Burk and Wayne Chamberlin

A collection of essays by 40 writers on the origins, use, and future threats to Montana's wilderness areas and what people can do to preserve these and other wild places in Big Sky Country.

The Bear Doesn't Know: Life and Wonder in Bear Country

By Paul Schullery

A life spent observing the large carnivores, told by one of the West's great writers on nature and humankind, who opines on everything from bears' so-called razor-sharp claws to why he refuses to watch *The Revenant*.

Falcons of North America (2nd ed.)

By Kate Davis

Learn more about these speedy raptors from one of the West's most learned authorities, and see some of the most stunning falcon photography taken by her and two fellow bird experts and master photographers.

Saving Species on Private Lands

By Lowell E. Baier

Landowners and land managers will appreciate this clear-eyed guide to working with federal agencies to manage private property for the good of wildlife, local communities, and the bottom line.

Five Months on the Missouri River: Paddling a Dugout Canoe

By Thomas J. Elpel

For all those people who've ever dreamed of carving a canoe from a fir tree then paddling it down the Missouri River, the author details his five-month journey with four friends along the route of the Corps of Discovery, meeting new friends and discovering their own modern wonders along the way. ■

In 2013 *Montana Outdoors* published a "Best 100" issue, featuring the 100 things people can see and do to fully appreciate Montana's state parks, mountains, forests, waters, and the fish and wildlife that live there. It's been our most popular issue ever.

Now we're working on the "Next 100" issue, for July-August 2022, featuring an additional 100 places and experiences for people to visit or do to further engage in Montana's natural world.

This time we're soliciting suggestions from *Montana Outdoors* readers. If you have a place or activity you think is essential for fully appreciating the state's outdoor world, please email us at **montanaoutdoors@mt.gov** with the following information:

1. the essential outdoors place or activity;
2. where it is located or best done; and
3. the best time of year it can be seen or experienced.

Before submitting, please check the Best 100 issue to make sure your recommendation is a new one. View that issue at https://qrgo.page.link/x17gD or by scanning this QR code with your smart phone camera:

We can't acknowledge submissions when they come in. If we choose your recommendation, you'll see it featured in the July-August 2022 issue along with your name.

FWP VIDEO SHOWCASE

Recent videos produced by FWP staff for social media and television

Sandhill crane fall migration
FWP biologists worked with federal and state colleagues to capture sandhill cranes, fit them with GPS transmitters, and track their migration along the Pacific Flyway.

Outdoor therapy
FWP's Beth Shumate talks about how time spent in Montana's outdoor "health centers" can improve our mental and physical health.

Nuts about squirrels
FWP education specialist Corie Rice talks about her favorite bushy-tailed, tree-dwelling, seed-storing fall foragers.

OUTDOORS JUST FOR KIDS

By Brett French. Illustration by John Potter

As the weather gets colder and snowier, it's hard not to envy mountain goats.

These white animals with shaggy hair seem to have no problem staying warm in the winter, even high in the frosty mountains where it gets very cold. Spanish explorers called them "snow goats," according to *Large Mammals of the Rocky Mountains* by Red Lodge author and photographer Jack Ballard.

If you have ever been to Glacier National Park or hiked in the Beartooth Mountains, you may have seen mountain goats. You can also see them in the Crazy and Cabinet mountains. Males are called "billies," females are "nannies," and babies are "kids."

Although male and female mountain goats have horns, the males' horns are curved from front to back. The females' horns go more straight up and then back.

Billies are also bigger. A large male can weigh up to 300 pounds. Females are more likely to weigh around 130 to 185 pounds, Ballard writes.

Mountain goats are not related to wild or farm-raised goats. They are a unique species only found in North America and are actually more closely related to musk ox, another shaggy beast that does well in the cold north.

HOW DO YOU DO THAT? HOW DO YOU STAND THE COLD & SNOW? THE HARSH ENVIRONMENT? AND HOW DO YOU STAND UP THERE, UNAFRAID of HEIGHTS? IT JUST... REALLY... GETS MY GOAT!
11/15

One of the coolest things about mountain goats is their ability to climb around on steep cliffs. They look fearless when standing on high rocks. Their great balance is partly because of their wide feet, which each have two large toes. The bottoms of their feet are rough, helping them grip onto rocks and cliffs.

If you see goats, do not approach them, even though they look friendly. Goats have been known to use their sharp horns to injure people on hiking trails, so give them space. ■

Brett French is the outdoors editor at the Billings Gazette.
John Potter is an artist and illustrator in Red Lodge. See other "Outdoors Just for Kids" columns at billingsgazette.com.

Houndstongue *Cynoglossum officinale*

Illustrations by Liz Bradford

What it is

Houndstongue, also known as beggar's lice, is a noxious weed that came to the United States in the late 1900s mixed with grain from Europe and Asia. This biennial plant grows only leaves its first year, then produces stems 1 to 4 feet tall, with branches covered in sticky seeds. The plant's name comes from the leaves, which resemble a dog's tongue.

ACTUAL SIZE

Where it is

Houndstongue is found throughout Montana, most commonly along streams and rivers, in road ditches, and on construction sites and other disturbed areas.

How it spreads

Roughly the size of small watermelon seeds, brown houndstongue seeds are covered in tiny Velcro-like hooks that latch onto clothing or animal fur. Cattle sometimes become covered in houndstongue seeds, as do bird dogs after a day afield.

Why we hate it

Bird hunters despise the seeds, which can take hours to pull from a long-haired dog's coat or a wool hunting jacket. When embedded in sheep, houndstongue seeds greatly reduce the value of wool. Even worse, the plant can poison livestock, especially horses, and outcompetes native vegetation eaten by livestock and wildlife.

How to control it

Hunters need to pull any seeds off their clothing or dog's fur as close to the plants as possible. Don't "pick and flick" when you get back to the vehicle, which spreads seeds to new areas. Put them in a plastic bag and then a garbage bin or burn barrel. Landowners can pull the plants by hand or mow flowering plants to the base and properly dispose of them to prevent seed production. ■

Learn more about noxious weed control at mtweed.org

A quick look at a concept or term commonly used in fisheries, wildlife, or state parks management.

"Conifer Expansion"

Conifer expansion, or succession, is the process of coniferous trees such as Douglas fir expanding into and taking over open grasslands or shrublands. It's a problem for grazing wildlife such as elk that feed on grass, mule deer that need shrubs like bitterbrush, and for sage-grouse and other sagebrush-dependent species.

Historically, many grasslands were kept open by wildfires caused by lightning strikes or by intentional fires set by Native Americans. But for the past century, most wildfires have been suppressed to protect homes and communities, depriving open areas of the flames' cleansing benefits. Lacking shade, grasslands are usually too hot for conifers to survive, but during wet, cool periods—like from the 1940s through late 1970s—young trees can gain a toehold and then produce enough shade for each other to foster growth and further expansion.

FWP, conservation groups such as the Rocky Mountain Elk Foundation and Mule Deer Foundation, and landowners work to keep open areas open on public and private property by cutting down trees taking over grasslands or using prescribed burns to kill seedlings and saplings. FWP's focus is mainly on reducing conifer expansion on state wildlife management areas, where crews are hired to cut down trees. Larger trees can be sold as saw logs and pulp to offset the costs of the work, while smaller logs are burned in winter or ground into wood chips. ■

A conifer removal project funded by the Sage Grouse Initiative.

Martens Come Home

FWP and trappers team up to restore native furbearers to their historical habitat in the Little Belt Mountains.

BY TOM KUGLIN

A low growl rumbles from the pine box sitting in the snow, then tapers off for a few seconds as the container's occupant gingerly pokes its head out before quickly retreating back inside.

This in-and-out dance goes on for 30 minutes as Montana Fish, Wildlife & Parks wildlife technician Rob Francisco awaits a marten that seems in no hurry to exit its confines. Francisco tries tapping the box to see if the cat-sized furbearer will skedaddle. Nope. ▸▸

NOT QUITE READY Recently transferred from a forest near Georgetown Lake, a marten peers from a transfer box set in the Little Belt Mountains before dashing out to explore its new home.

PHOTO BY MORGAN JACOBSEN/MONTANA FWP

"They all have their own personalities," Francisco says, turning the box so the opening aims skyward. "Some come right out and just take off. But most of them exit pretty slowly and take a look around."

Who can blame the critter for being cautious. Yesterday it entered this same box near Georgetown Lake, attracted by a scrap of beaver meat tucked inside. After a 300-mile truck ride east, then a trip on a snowmobile from King's Hill, it became the final animal released into the Little Belt Mountains in FWP's first marten translocation project in more than half a century, conducted in the winter of 2020-21.

Earlier this February morning in the FWP White Sulphur Springs office, Francisco did a thorough biological workup. After tranquilizing the marten, he weighed and measured it, drew a small blood sample from its ear, and estimated age based on weight and tooth wear. The marten's DNA derived from the blood will be critical for tracking the progress of the historic translocation.

Back in the forest, waiting for the reluctant occupant to exit the box, Francisco says he was relieved that this marten and the 29 others trapped in various parts of southwestern Montana for the translocation survived their journeys. "Because they have such a fast metabolism, martens need to keep moving to keep warm. We were concerned that they'd run around so much in the box that the transports could be fatal," he says. "But it has gone real smooth. They're tough little critters."

Suddenly the young male marten pops out of the opening like a jack-in-the-box and surveys his surroundings. Like all martens, he is strikingly handsome, with gray-tipped ears, silky shades of chocolate and amber body fur, and a fiery orange chest patch.

He leaps to a nearby tree and scrambles up 15 feet, pauses, then jumps back to the ground and bounds away. Francisco props the hindquarter of a road-killed deer against a tree and sets up a trail camera to monitor the newcomer's progress in the coming weeks.

ESSENTIAL EXPERTS Montana Trappers Association members Joe Michaels (left) and Matt Lumley position one of 12 live-traps deep in the Gallatin Range this past winter. Checking the traps daily over several months, they managed to catch three martens for the Little Belts reintroduction project.

Bringing martens to the Little Belts

For years biologists with FWP and the U.S. Forest Service were unable to find martens in the Little Belts, located between Helena and Lewistown. The mountains contain prime habitat for these members of the weasel family, which favor mature conifer forests and feed on voles, red squirrels, and other small mammals. What's more, the small carnivores live in the nearby Big Belt Mountains. Biologists looked for marten tracks and asked volunteers with a multistate wolverine survey conducted in 2017 to look for marten sign. But nothing showed up. "If they were there, the wolverine survey would have picked them up," says Francisco.

No one is sure why the Little Belts lacked martens, but they may have been collateral damage from aggressive predator control campaigns and unregulated trapping in the early 20th century. Until it was outlawed in 1972, woolgrowers regularly used poison to kill coyotes and inadvertently killed martens and other "nontarget" predators and scavengers attracted to the lethal baits.

Because the Little Belts are isolated, surrounded almost entirely by farm- and rangeland, martens never moved in from the Big Belts and other mountainous areas. The forest dwellers feel vulnerable out in the open. "They've been an integral part of this mountain range ecosystem for millions of years, since the Pleistocene Era," says Jay Kolbe, FWP wildlife biologist in White Sulphur Springs. "It's only been in the last 100 years or so they've not been present. But because they don't disperse well across non-forested habitat, once they disappear from areas like this, they don't ever come back."

> **"This has been one of the most rewarding projects I've ever had a chance to be a part of."**

Unless they get a little help.

To transport martens into suitable but marten-devoid habitats, wildlife biologists first had to learn where the small carnivores had the best chance of survival. Kolbe worked with the Montana Natural Heritage Program to develop a "predictive habitat model" based on trapping records.

LEFT TO RIGHT: TOM KUGLIN; MORGAN JACOBSEN/MONTANA FWP

BLOOD WORK As Jay Kolbe looks on, Rob Francisco inserts a drop of blood taken from a sedated marten's ear into a vial to be sent to a genetics lab. Afterward he will weigh the animal and check tooth wear to determine its age. Though not essential, oxygen is given as a precaution.

Martens are plentiful in many western Montana forests. Each year trappers harvest roughly 1,000 of the furbearers and provide each harvest location to FWP. From approximately 10,000 locations reported over a decade, researchers created computer mapping layers showing forest density, conifer type, water sources, and other factors to build a habitat model. With this tool, Kolbe and his colleagues could see that the Little Belts contained the prime habitat martens prefer and where the best release sites would be. "Biologists have always known this area has quality marten habitat, just by looking at it, but the model backed up that intuition with objective data," Kolbe says.

Once they knew where to put martens, biologists had to figure out how many to trap and translocate. And from where? They decided a minimum of 60 martens from a variety of locations would be required to provide genetic diversity and maintain a healthy, self-sustaining population.

Montana is home to two marten species: Pacific (*Martes caurina*) and American (*Martes americana*). Both look the same but are genetically different and, reports suggest, have slightly different coloration. FWP chose to capture Pacific martens in the southwestern part of the state after considering which of the two species originally occupied the Little Belts. In addition to the Georgetown Lake area, FWP crews and partners collected martens from the Big Hole, Beaverhead, Madison, and Absaroka areas.

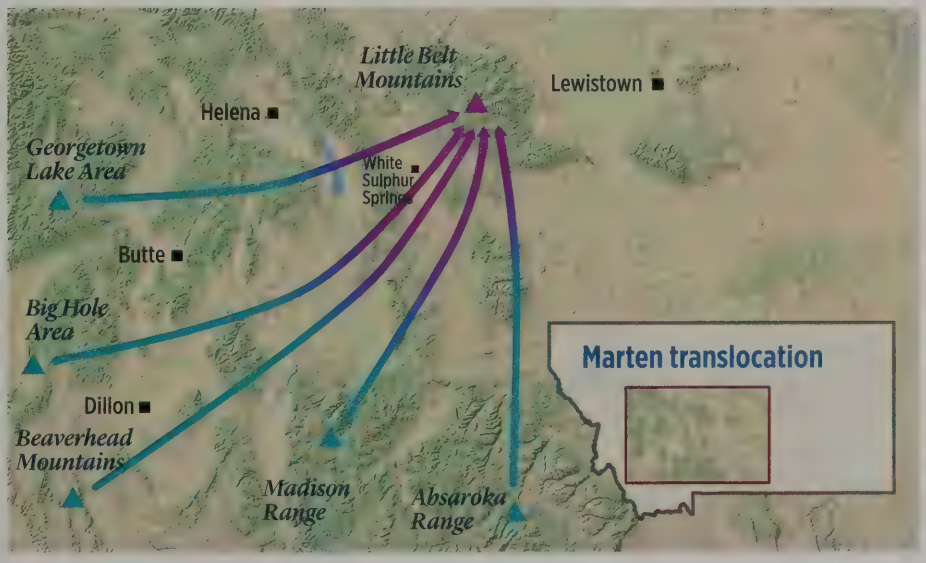
A total of 30 (10 females and 20 males) were trapped and transferred this past winter, and another 30 will undergo the same routine this coming winter. "Our goal is to get at least another 20 females this time," Kolbe says.

FWP partners with trappers

When the Montana Fish and Wildlife Commission approved the marten translocation in 2019, it set in motion a project that was ecologically important and historic. The state's last translocation took place in 1956 in the Big Belts, just west of White Sulphur Springs. Genetic analysis shows that descendants of the nine martens released that year are still there today.

The Little Belt project cost nearly $90,000. After securing a $25,000 contribution from the Great Falls Chapter of Safari Club International, FWP paid the rest with federal Pittman-Robertson funding.

To capture martens for relocation, FWP turned to experts from the Montana Trappers Association (MTA). It wasn't easy, even for seasoned trappers. For instance, during much of last winter, MTA members Matt Lumley and Joe Michaels took a snowcat each day into the Gallatin Range north of Gardiner to check a dozen marten capture boxes, some-



MULTIPLE SOURCES FWP biologists recruited members of the Montana Trappers Association to capture a total of 30 martens from throughout southwestern Montana for the relocation effort.

times in near-blizzard conditions with temperatures below -25 degrees F. The pair eventually live-trapped three martens for the relocation effort. "This has been one of the most rewarding projects I've ever had the chance to be a part of," Lumley says.

Dillon-area trapper Tom Barnes, who spends his winters on a snowmobile running a marten trapline, added capture boxes and live-trapped several animals for the project. "Hopefully FWP will be able to determine some other spots with suitable habitat for marten, because they're a species we like, and we want to see more viable populations," he says.

FWP officials say the partnership has been critical to the project's success. "It's been fantastic having the fur trappers donate their time and effort to help out," Kolbe says.

Yet Kolbe notes that the goal of the Little Belts relocation project isn't to produce furbearers for trapping. "The department has a responsibility wherever possible to restore native wildlife species to native habitat, and this is just a really great opportunity to do that," he says.

It's possible that someday the Little Belts population will grow large enough that FWP could allow limited harvest. "But the fact it might not ever happen shows that the trappers who were helping weren't doing it out of self-interest but from an appreciation of the species and desire to help populations any way they can," Kolbe adds.

MARTEN MONITORING At a site in the Little Belts where martens were released last winter, Francisco descends a Douglas fir on which he has placed a trail camera aimed at a scent station installed on a nearby, thinner tree (to discourage bear visits). The scent station consists of a plastic cylinder (right) fitted with copper gun brushes. The bristles snag hair of martens crawling through to investigate a smelly lure placed at the far end. By checking the camera, Francisco can see if hair in the trap came from a marten or some other curious animal.

PHOTOS: THOM BRIDGE. OPPOSITE PAGE: JOHN SHARKEY

New monitoring method

In July, Kolbe and Francisco venture back to the Little Belts hoping to find and identify some of the 30 translocated martens. The biologist and technician are trying a relatively new method used successfully for tracking wolverines and fishers. They hang a white plastic cylinder on a tree 20 feet above a mountain stream. Above the tube, the inside of which is lined with copper gun-cleaning brushes, is a smelly lure. Martens attracted to the scent must pass through the tube, leaving behind hairs that carry their DNA signature.

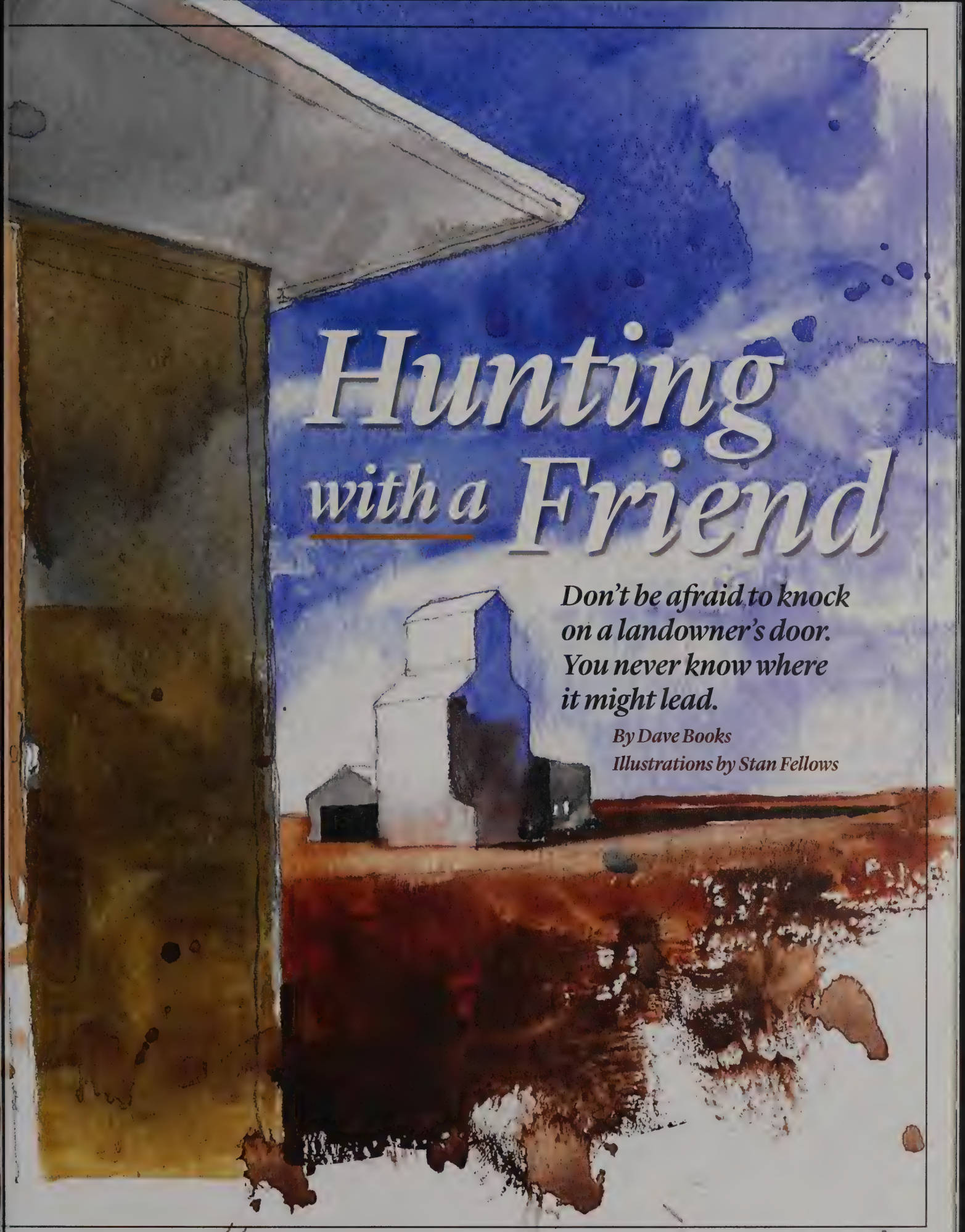
Usually furbearer bait stations are set in winter so that bears, then in hibernation, don't take them down. But checking stations can be difficult in deep snow. Kolbe read about overseas biologists monitoring European sable in summer by hanging detection cylinders high on thin trees to dissuade bears from climbing. "Its so much easier visiting the sites this time of year compared to winter," he says. A nearby camera trap captures any activity and shows if hairs are from a marten or some other mammal.

As these newly released martens begin to reproduce, DNA collection and analysis could allow biologists to document successful reproduction.

A few weeks later, in August, Fransisco checked a camera trap and found that a marten had visited one of the hair-trap sites. Based on coloration in the camera trap photos, he suspects it was F23, a small female originally from the Beaverhead Mountains. He and Kolbe are still awaiting news from a genetics laboratory confirming whether that marten or another of the transplants had visited the bait station. "We have every reason to believe that most if not all of the translocated martens are still alive and doing well," Francisco says. "But it sure would be nice to have some proof."

Tom Kuglin is the bureau chief for the Lee Newspapers State Bureau in Helena.

BACK WHERE IT BELONGS Montana is home to two different marten species: the Pacific and the American. Both live in mature conifer forests, where they feed on voles, red squirrels, and other small mammals. Biologists suspect that Pacific martens originally lived in the Little Belts before they disappeared a century ago.



Hunting with a Friend

Don't be afraid to knock on a landowner's door. You never know where it might lead.

By Dave Books

Illustrations by Stan Fellows

I have to admit that I'm not as enthusiastic about knocking on doors as I once was, what with access to private land getting tougher each year. Or maybe it's just that I'm growing older, and standing on someone's doorstep, hat in hand, to ask for a favor is harder than it used to be. Over the years, though, screwing up my courage to request permission has sometimes led to great pheasant hunting and once even forged a long-lasting friendship.

One day while exploring new territory in far northeastern Montana, I pulled off a lightly traveled road near several grain bins to let my dogs out for a breather. When I opened the truck door, I saw a rooster pheasant scuttle into the creek bottom behind the bins. With my internal bird-seeking radar system now on full alert, I quickly noticed a couple of things: The draw looked like awfully good pheasant habitat, and there was a "No Trespassing" sign on the fence—not one of those intimidating "Keep Out, Don't Ask" signs, but a sign nonetheless.

I didn't see a house nearby, but a mile or so away I found a few houses, a stately old barn, some weathered corrals, a country schoolhouse no longer in use, an old grain elevator, and—wonder of wonders—a bar sporting a "Hunters Welcome" sign. I took that as a good omen and pulled in to ask for information and cut the road dust in my throat.

There was just one pickup truck in the parking lot and it had the look of a well-used farm vehicle. I went in and bellied up to the bar a few stools down from the only other customer, an old cowboy sporting a sweat-stained Stetson. When the silver-haired lady behind the bar delivered my Budweiser, I asked her if she knew whose land that might be up the road next to the grain bins.

She turned to the man in the Stetson. "That would be Richard's land, wouldn't it, Jim?"

Jim turned to talk to me. "Yeah, that would be Richard's land. He lives in town but comes out here 'most every day to tend his garden and tinker around in his barn. That's his barn across the road. It's historical, you know, even been written up in a book. Richard's a nice guy."

I figured by "town" he meant Scobey, the last town of any size I'd passed through and where I planned to camp for the night. "You mean Scobey?"

"Yep, that's the only town around. Ask at the Cenex station. Everyone knows Richard; they'll tell you how to find his house."

"I have my camper set up in the little campground at the edge of town. If you're not doing anything, come over for a drink after supper." He did, and that marked the beginning of a friendship that lasted more than a decade.

The next half-hour passed pleasantly as I sipped my beer and talked with Jim and the silver-haired lady about weather, crops, and football—the usual things strangers talk about in small-town bars. Then I said thanks and so-long, thinking I might still have daylight enough to find Richard, get his blessing (I'm an eternal optimist), and come back out for a late-afternoon pheasant hunt.

When Richard answered his door he was younger than I had pictured him—maybe mid-50s, about 5-foot-9, stocky, gray hair, twinkling blue eyes, and drooping handlebar mustache, with a Labrador the size of a small tank behind him.

When I saw the dog I thought, "Uh, oh, this guy's a hunter. He probably won't want any competition for his roosters." But he seemed friendly when we introduced ourselves and shook hands. I told him

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Dave Books, of Helena, is the author of Wingbeats and Heartbeats: Essays on Game Birds, Gun Dogs, and Days Afield. *Stan Fellows is an artist based in Colorado. This essay originally appeared in* Pheasants Forever.

where I was from and how I'd gotten his name. He laughed. "That's Jim alright. Guess I should hire him as my public relations guy."

I thought I'd better get down to business. "I saw a rooster run into the creek bottom at your grain bins down the road. Any chance I could do some pheasant hunting this evening?"

He stroked his chin. "It's getting late. If you're staying in town I'll run out with you in the morning and we'll look around."

"I have my camper set up in the little campground at the edge of town," I replied. "If you're not doing anything, come over for a drink after supper." He did, and that marked the beginning of a friendship that lasted more than a decade.

During the ensuing years we hunted together whenever I visited in the fall, played golf at the local course a few times, swapped lies, talked dogs, and most of all enjoyed each other's company. I appreciated his dry sense of humor and obvious love for the land. We were kindred spirits in many ways—we both admired game birds, shotguns, and bird dogs, and staunchly supported wildlife conservation. Although we lived 500 miles apart, we kept in touch through emails and phone calls throughout the year.

I looked forward to many years of friendship ahead, but then one winter day alarming news came in the form of an email. "I went in to get checked for a cough I can't seem to shake," Richard wrote. "They found a spot on my lung. It's cancer, but the good news is the spot is small and they caught it early."

It turned out to be a serious problem. Despite the best medical treatment available, Richard's health declined and he passed away a year-and-a-half later, in the spring. The fall before he died, I stopped to see him. The disease had robbed him of his strength and vitality, but he still wanted to make a trip out to his farm. He needed a walker to get around and I had to help him up into the truck. We spent a couple of hours driving around, looking at the countryside. A dedicated Pheasants Forever member, amateur botanist, and ardent conservationist, Richard took pride in his land, the plant mixes he'd put into his CRP acres, and the wildlife his farm supported.

At Richard's insistence, we stopped along the way and I took my shotgun and my Brittany, Tess, for a short loop through a piece of cover that had been good to us over the years. As luck would have it, Tess pointed and I shot the lone sharptail that erupted from a patch of chokecherries. When I got back to the truck, Richard was thrilled to hold the bird and stroke its soft feathers. I'm sure it was the last game bird he ever touched.

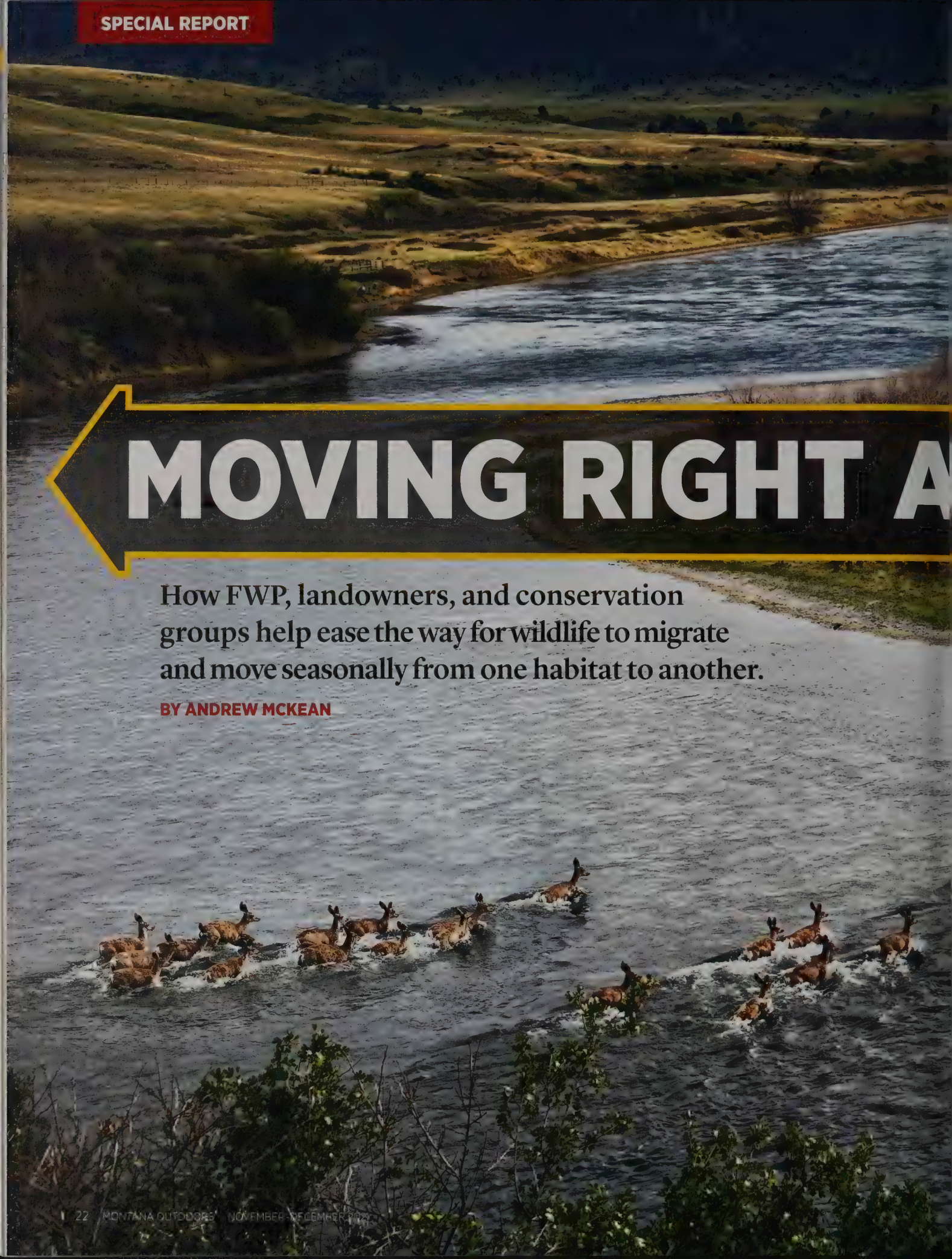
On the way home we stopped for lunch at the country bar where I'd first asked about Richard's land. Jim wasn't there, but the silver-haired lady was behind the bar. She looked sad as she took our orders and brought our burgers and drinks. Back at Richard's house we spent an hour talking about past hunts and making plans to hunt again when his health improved—even though we both knew it wasn't likely to happen.

The fall after Richard died, I made the long trip to his farm for a September sharptail hunt. It was a cold, clear morning, and the air smelled fresh and clean. The prairie landscape had begun to take on the burnished copper and gold of early autumn. As I made my way along the creek that winds through Richard's property, I saw something high on a bluff in the distance glinting in the sunlight, something I didn't remember seeing before. When I got closer I could see it was a metal cross. I'm not an especially religious person, but what I found inscribed on the cross brought me to my knees: "My ashes are spread throughout this land, I'll always be with you, my friend."

So, my fellow pheasant hunters, treasure your hunting partners while you have them, both human and canine, and your landowner acquaintances as well. Don't be afraid to knock on a door now and then; it might lead to something larger than a day afield. Enjoy every rooster you see, every one you flush, and every one you are lucky enough to take home. You never know when it might be your last.

As for me, I'll continue to make the pilgrimage to Richard's farm each fall as long as I'm able. When I'm hiking the fields and hills, I'll feel his presence, and as long as I'm there I'll know I'm hunting with a friend.

Richard Kerstein, of Scobey, was widely regarded for his dedication to child welfare, outdoors conservation, and plants. He was a member of the Montana Fish and Wildlife Commission from 2015 until 2017, when he died at age 71.



MOVING RIGHT A

How FWP, landowners, and conservation groups help ease the way for wildlife to migrate and move seasonally from one habitat to another.

BY ANDREW MCKEAN

EVER ON THE GO Mule deer ford a channel of the Missouri River near Craig. Rivers and especially roads and fences may block not only big game migrations between summer and winter range but also necessary movement to food and water sources within seasons.

PHOTO BY JOHN WARNER

Brett Dorak looks at barbed-wire fences the way a mechanic might look at your car. He eyes the structure, style, and performance of common roadside fences not only for their ability to keep livestock in a pasture, but for their tendency to keep wildlife out. Dorak knows that something as simple as a low bottom wire on a fence can be the difference between life and death for pronghorn, commonly called antelope, which try to scoot under fences rather than vault over like deer and elk.

For two years, Dorak, the Montana Fish, Wildlife & Parks area wildlife biologist in Malta, has been compiling GPS locations from about 60 collared pronghorn that move vast distances each year across the prairies south of U.S. Highway 2. In places with passable fences, the locations string north and south, indicating where pronghorn move with the seasons. But in places with impassable fences, the location dots on a map show where the animals gather and mill looking for crossings. Stymied by the barbed-wire barriers, pronghorn are more likely to be hit by vehicles and killed by predators, and are more susceptible to exposure and starvation.

"Before we had these collars, we could only guess at impediments to migrations," says Dorak, whose pronghorn migration study is one of a half dozen around the state. "Now, we can actually see—from GPS locations—these bottlenecks. The next step is to try to make the barriers passable."

In many cases, that means approaching a rancher with an offer to retrofit fences, especially old woven-wire sheep fences that are almost universally impassable to pronghorn. Most landowners appreciate wildlife and want to help accommodate movements across their ranch. But with the cost to replace fencing running up to $10,000 per mile, it's not always feasible on their own. That's why many ranchers are receptive to working with FWP and other partners. The new or modified fences, with a raised, smooth wire on the bottom and properly spaced barbed wire above, keep cows in but let pronghorn and mule deer pass under or over without harm.

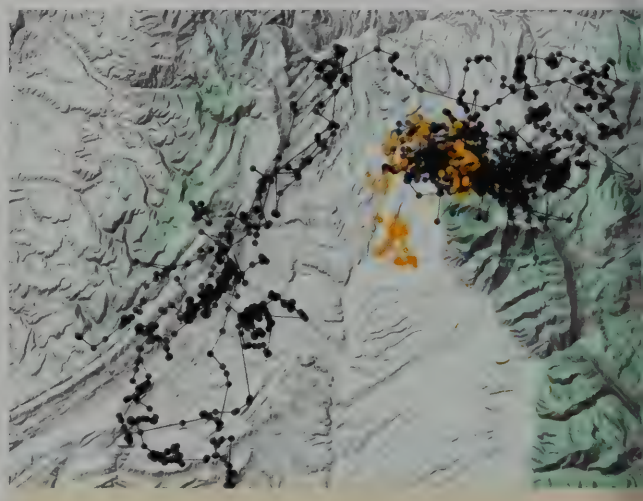
Similar fence modifications elsewhere in remote Phillips County are enabling one of the world's longest ungulate migrations, a 550-mile-long trek of pronghorn between south Saskatchewan and the Missouri River.

All these Hi-Line ranches might be considered mechanic shops of migration mitigation. This is where the hard work of making local landscapes permeable gets done.

Rancher Leo Barthelmess is taking fence remediation to the next level. Barthelmess has actually removed most internal fences from his operation. Instead of barbed wire, he now controls his cows by using tracking collars similar to those that Dorak uses on pronghorn. These bovine equivalents of canine shock collars, guided by cell-phone signals rather than satellites, train the cows with audible and stimulatory cues to stay in pastures that aren't delineated by wire.

"There's a bit of a curve as they learn where they can go and where they can't, but in a surprisingly short period of time they're trained to stay within a geofence defined by our cellular collars," Barthelmess says. The collars and cellular infrastructure were largely funded by a federal grant. "The result is less wire on the landscape and fewer impediments for pronghorn and other wildlife to navigate, and we can more intensively graze cattle in smaller pastures, moving them more frequently to mimic historical bison grazing patterns," he says.

Across Big Sky Country, ranchers, biologists, and land-use planners are finding ways to let wildlife pass without encumbrance, using data from GPS collars to see where our wild neighbors—pronghorn, deer, elk, bighorn sheep, and even grizzly bears—travel. They then help wildlife move between and around human habitations and infrastructure to complete seasonal migrations they



ALL OVER THE MAP This map shows the locations (yellow dots the most recent) of where radio-collared elk moved across a south-central Montana mountain range. With maps like these, biologists can see which core summer and winter habitats animals use, seasonal movements within winter and summer ranges, and migration routes between the ranges. The information is vital in understanding what elk need to survive, what areas may need protection, and where migration or movement blockages occur and may require remediation.

MONTANA FWP

Andrew McKean is the hunting editor of Outdoor Life *and a longtime contributor to* Montana Outdoors. *He lives on a ranch near Glasgow.*

have been undertaking for far longer than Montana has been a state, as well as make essential daily movements.

Their continued ability to do so—as Montana's population increases and we build more fences, highways, and subdivisions in their way—will be one of the great challenges of wildlife management in the coming decades. So it's worth looking at places where Montanans are finding ways to remove obstacles so wildlife can get to where they need to go.

ANCIENT ROUTES

All animals need to move. Within a season, wildlife may travel in search of water and food or to find ideal nesting habitat or places to safely rear their young. Many species also migrate—covering even greater distances between summer and winter range. Some migrations are modest, like sharp-tailed grouse traveling from a snowdrifted upland to a protected creek valley just over the ridge, or elk in the Missouri Breaks moving only a few dozen miles between winter range and spring calving grounds.

Other movements are epic, like the 125-mile trek of elk that winter in the upper end of Paradise Valley but summer on the southern slopes of Yellowstone National Park. Or the transcontinental migrations of raptors, shorebirds, and waterfowl.

Avian migrants have the benefit of flying over and around barriers. But land-based wildlife face more extensive and intractable barriers. Busy roads and impassable fences are the most well-known blockages that disrupt "connectivity"—the degree to which the landscape allows animals to move from one place to another. Railroads and irrigation ditches block movements of smaller creatures. Reservoirs and towns get in the way of meandering ungulates. Montana's fastest-growing areas—like the north-south river valleys that drain the Yellowstone Plateau—are among the very corridors that migrating mammals have used most intensively for thousands of years.

Black and grizzly bears don't migrate, but they do make seasonal trips in spring and fall that follow brushy stream corridors from forested mountains into lowlands. That sometimes brings them close to towns and ranches. Every spring, Wesley Sarmento, FWP's bear management specialist based in Conrad, monitors grizzly bears that traipse out of the Bob Marshall Wilderness Complex, following food along stream corridors, into the wheat fields and pastures of the Rocky Mountain Front and occasionally into nearby towns like Valier. Sarmento's responsibility is to try to keep the bears away from people.

"Most grizzly bears that make it really far out east are juveniles dispersing because they've just been chased off by their mother

FENCED IN AND OUT Barbed-wire fencing is necessary to delineate property boundaries and keep cattle off roads. Yet it also hampers the movement of some wildlife species. Elk (above) and moose are tall enough to negotiate most fences, but bears (below) and other species often struggle to get through the barriers.

HELPING THEM CONTINUE Pronghorn evolved on grasslands, where leaping over obstacles was rarely necessary. When faced with barbed-wire fences, they almost always try to slip underneath the bottom strand. Ranchers who replace the low barbed strand with smooth, elevated wire at key crossings (above) make it easier for the animals to continue epic migrations that require crossing hundreds of miles of terrain and sometime even reservoirs and rivers (below).

and are exploring new areas," he says. "Our job is to ensure that they don't get in trouble and to respond quickly when they do."

Sarmento hazes bears away from places where people live, and he works with livestock producers to prevent conflicts, such as by removing livestock carcasses near ranch homes and towns and installing electric fencing. "All these strategies have greatly decreased bear activity in and around Valier," he says. At the same time, grizzlies are able to maintain their historical seasonal movements, now with occasional detours around places where they might cause problems.

Wildlife managers throughout North America have been monitoring, mitigating, and accommodating wildlife movement for more than a century. Recognition of the collective responsibility of managing migrating wildlife led to the 1918 Migratory Bird Treaty Act. In the 1930s, Montana's then-named Fish and Game Department identified winter migrations of elk and purchased game ranges, now called wildlife management areas, along the Sun and Judith rivers to provide elk with low-elevation winter habitat.

Dorak says his predecessors first began studying Hi-Line pronghorn in the 1950s, using binoculars to watch the cross-border migrations he now follows on a computer screen.

Across the country and the world, wildlife migrations have grabbed the public's attention in recent years because data from GPS collars and remote camera traps have revealed a previously hidden world of animal behavior. High-profile wildlife migrations—which include impossibly long mule deer treks and elk movements that can thread across state lines and multiple mountain ranges—have intrinsic appeal. They also

cause us to marvel at wildlife's amazing tenacity, like the pronghorn herd that one spring swam across Fort Peck Reservoir following ancient routes embedded in their DNA.

Perhaps the most effective tool of all is landowner tolerance for having wildlife on their property.

The human barriers to these incredible journeys have also caught the public's eye—especially here in the spacious American West where it seems improbable that wildlife wouldn't have room to roam.

Growing recognition that critters must move to survive underpins a 2018 order from the Secretary of the Interior that provides federal funding to identify migration routes and mitigate barriers. That's what pays for Dorak's fence remediation and a host of other migration-related projects across Montana. FWP, in its recently drafted Terrestrial Wildlife Movement and Mitigation Strategy, aims to identify the corridors and "landscape permeability" that enable migration and seasonal movement.

MAKING ROOM IN THE MADISON

Harry Liss delights in inviting visitors into his upper Madison Valley kitchen by offering them a breakfast of "poached eggs and elk."

The joke is a big hit with game wardens, says Liss, whose house is just downstream from Quake Lake. In summer, enough elk trickle through to give the wordplay some traction. But in winter, his place is covered with bighorn sheep. Deep snow drives the mountain ungulates down from the high country along the Idaho state line to the sagebrush flats around Liss's homestead. This is yet another type of migration—elevational movement between high-country summer habitat and lower-elevation winter range.

"I built my house where they winter, so I figure it's my duty to give them some quarter and protection," says Liss, who works with neighbors in his rural subdivision to keep barking dogs and revving snowmobiles from stressing the bighorns. "I enjoy having sheep around, but I'm even happier when spring comes and they drift back up into the mountains."

Farther down the Madison Valley, Jeff Klein makes similar accommodations for migrating elk. The manager of a large ranch near Ennis, Klein has had to adjust almost all of his agricultural practices in order to separate cattle from elk that might carry

OPPOSITE PAGE PHOTOS: JOE RID

DODGING THE RAM Roads and vehicles can even disrupt seasonal movements of bighorn sheep that move down from high elevations to lick road salt and graze on roadside vegetation.

Recent projects help wildlife keep moving

For decades, FWP and partner organizations have identified critical migration routes and protected key habitats that anchor seasonal movements. Ducks Unlimited, for instance, has been working with Montana biologists since the 1980s to protect breeding potholes and grasslands north of the Hi-Line used by waterfowl flying from wintering areas along the Gulf of Mexico.

In recent years, a Secretarial Order from the Department of the Interior (SO3362) has provided funds for even more migration enhancement and core habitat protection. The projects below, totaling $1.1 million, benefit land-based wildlife. They were funded in 2020 and awarded via a competitive process. FWP biologists and technicians helped identify project priorities and carry out the fence remediations and other work:

- $472,000 for a Hi-Line fence and education project awarded to the Ranchers Stewardship Alliance through the National Fish andWildlife Foundation (NFWF).
- $68,772 for a Big Hole Valley fence project funded through the U.S. Fish & Wildlife Service's Partners for Fish and Wildlife Program.
- $166,000 for the Horse Prairie Big Hole fence project, funded through the NFWF.
- $400,000 for a conservation easement in northwestern Montana awarded to the Trust for Public Lands and funded through the NFWF.

Some of the 2.1 miles of woven wire fence removed and replaced with wildlife-friendly four-strand wire in the Horse Prairie fence project using SO3362 funds.

brucellosis, a bacterial infection that can cause cows to abort their calves.

Klein puts as much distance as he can between his cows' calving grounds and the elk that occupy the higher benches of the ranch. He rations hay in the winter so there's no surplus that might attract elk, and in the summer he cuts forage earlier in the season to reduce the appeal to elk in search of succulent greenery.

Madison Valley ranchers are spending more time accommodating elk because seasonal migrations are slowing and morphing into resident herds, Klein says. That's partly because the valley is being filled in by more fences, more rural homesites, and more impediments to migration.

Montanans need to recognize those cumulative effects, says Gary Burnett, executive director of the Heart of the Rockies Initiative in Missoula. Burnett negotiates agreements between public agencies and private landowners that promote wildlife migration. Burnett's 10 years as director at the Blackfoot Challenge, a group of landowners and conservationists that promotes sustainable ranching from Lincoln to Potomac, showed him the benefits—to wildlife and to producers' financial bottom line—of working with multiple neighbors across a wide landscape. Nowadays he's also leading the Migration Coalition, a consortium of conservation groups interested in finding landowner-friendly solutions to wildlife movement barriers and disruptions.

What's new is that there is now funding and renewed energy around reducing migration barriers on public and private lands.

"We see three needs for wildlife movement and mitigation," Burnett says. "Managing subdivisions by working on voluntary agreements with landowners. Promoting permeability practices with highways and other infrastructure. And more stewardship that keeps land productive for agriculture."

In many cases, those are the same prescriptions that result in productive habitat for year-round wildlife residents, says Lauri Hanauska-Brown, FWP's wildlife project facilitator.

"Wildlife migration has been elevated in visibility in recent years, but as an agency, we've been conserving priority habitats like wildlife management areas and conservation easements for decades," Hanauska-Brown says. "In many cases, those lands were prioritized because of their value as

The implications of gathering data

The increasing use of GPS collars on wildlife has provided fascinating insights into how animals move across landscapes. It has also put state wildlife officials in a tough spot as they decide who is allowed to use the data generated by the collars.

Similar to national discussions about digital privacy, wildlife managers are navigating the tricky path to ensure that GPS data is available to those who need it to reduce migration barriers and study wildlife dynamics. But because wildlife movement details could also be used by hunters and outfitters to target high-use routes or migration bottlenecks, agencies tend to closely hold the most specific data.

"In some cases, it's a matter of scale," says Lauri Hanauska-Brown, who coordinates FWP's special wildlife projects. "For instance, if the collars identify a pinch point where mule deer pass for a single week every year, it wouldn't be ethical if hunters were able to concentrate around that specific spot. It wouldn't be legal, either, because under state law, people can't use location data to kill or harass wildlife. Similarly, we don't want to publicly identify ranches that might play essential roles in a species' migration path because that could inappropriately focus attention on their operations."

But the big picture, showing the sweeping scale of wildlife migrations such as pronghorn moving across the Hi-Line or mule deer in Carbon County moving between winter and summer range (right), needs to be shared with the public.

"These are fascinating examples of some of the most extensive wildlife migrations on record," Hanauska-Brown says. "The fact that they're still happening, and that we're still discovering things we didn't know, says a lot about how well Montanans have conserved the permeability of most landscapes. It's important for people to know that."

Hanauska-Brown says FWP is working to find the sweet spot that satisfies the public's right to wildlife movement data while still protecting those priority landscapes that species have moved across long before biologists had satellites or global-positioning technology to track them. ■

Map with arrows showing the general movements of radio-collared mule deer in Carbon County.

FINDING WHERE THEY GO Biologists and landowners gather many types of movement data that can help identify movement barriers. Left and above: GPS collars are the most accurate tools for identifying precise routes. Maps of this information are helpful for deciding how to ensure that wildlife can continue to move, such as by adjusting fencing or re-siting natural gas wells.

"VENCING" Left: Some ranchers are using virtual fencing collars to reduce the amount of barbed wire on their property. The collars work like those for training dogs, stimulating cows if they try to cross GPS locations programmed into the devices.

FENCE MODIFICATIONS Right: Different fence types can be adjusted to accommodate different wildlife species and needs. The top railing of wood rail fences can be temporarily removed to allow elk to jump over during certain times of year. The bottom strand of barbed-wire fences can be raised a few inches and replaced with smooth wire so pronghorn can scooch underneath and carry on journeys that sometimes cover hundreds of miles.

OPENING THINGS UP Right: Many big game animals move along wildlife corridors such as wooded rivers connecting national forests with WMAs or conservation easements. Highways are major barriers to these migrations. Solutions include the 42 wildlife passageway culverts installed under stretches of U.S. Highway 93 by the Confederated Salish and Kootenai Tribes and Montana Department of Transportation. Also maintaining connectivity are landowners who tolerate wildlife on and moving across their property.

migration corridors or as core habitats that anchor migrations."

What's new, she says, is that now there's funding and renewed energy around reducing migration barriers on private and public lands. "We realize that landowners are critical to continued wildlife presence on our landscape, and we have more tools to help them help wildlife."

Perhaps the most effective tool of all, Hanauska-Brown adds, is landowner tolerance for having wildlife on or moving across their property. "But we know it's not always easy, and we recognize that wildlife can cause problems. That's a major reason we're committed to partnering with ranchers and farmers to come up with solutions that work for them and for wildlife."

Back in Phillips County, rancher Leo Barthelmess watches his cows spread out across a fenceless pasture that migrating pronghorn can cross without interruption. Two years into his experiment with shock collars for his herd, he's happy with the results.

"These collars are never going to replace fences entirely, because you still need perimeter fences to be a good neighbor and keep your cows off the road," says Barthelmess, former director of the Montana Stockgrowers Association and an active member of the Rancher's Stewardship Alliance, which advocates wildlife-friendly ranching practices. "But I love moving cattle, I love managing grass, and I love helping wildlife. These collars are just another tool to help me keep doing what I love."

FROM WARRIOR TO WARRIOR

Crow leader Chief Plenty Coups will be among those honored in November at the centennial of the dedication of the Tomb of the Unknown Soldier

By Tom Dickson

On November 11, 2021, Elsworth Goes-Ahead will stand where his great-great-granduncle, the famous Crow leader Chief Plenty Coups, famously stood 100 years before beside the Tomb of the Unknown Soldier at Arlington National Cemetery in Washington, D.C.

In 1921, the Apsáalooke ("people of the large-beaked bird") chief captured the world's attention when, after a speech by President Warren G. Harding, he placed a wreath of flowers, his war bonnet, and his sacred coup stick on the tomb, which was dedicated that day. Speaking in the Crow language, Plenty Coups prayed that "the Great Spirit will grant that these noble warriors have not given up their lives in vain, and that there will be peace to all men hereafter."

This year, the Office of Army Cemeteries invited GoesAhead, a U.S. Marine Corps veteran, and seven other members of the Chief Plenty Coups Honor Guard to take the national stage and present flags at the centennial of the tomb's dedication.

"It's very emotional for me, especially given my own military background, to be representing Plenty Coups, the Crow Tribe, and the state of Montana on such hallowed ground for such an important historical event," says GoesAhead, who has carried the Chief Plenty Coups flag since 2017 as the Honor Guard's post commander.

GREAT CHIEF

Plenty Coups, whose Crow name *Aleek-chea-ahoosh* means "many achievements," is regarded as one of the great Plains Indian leaders. He was born in 1848 near present-day Billings and became a chief while only in his late 20s. Plenty Coups lived through the wars between the United States and Plains Indian tribes and the Indians' eventual forced assimilation and removal to reservations. An exceptional warrior, he was particularly skilled at capturing tethered horses from an enemy's camp, a prerequisite display of spiritual power required for becoming an Apsáalooke chief.

Tom Dickson is the editor of Montana Outdoors.

As a Crow leader, Plenty Coups traveled to Washington, D.C. repeatedly to negotiate with the U.S. government, railroad companies, and other powerful interests that wanted to remove the Apsáalooke people from their land. He successfully fought for their right to stay, though their reservation was eventually reduced to 2.2 million acres , a fraction of the size originally granted in a treaty with the U.S. government.

During his frequent visits to the nation's capital, Plenty Coups earned a reputation for statesmanship and was renowned for his wisdom, eloquence, and compassion. He was chosen by the U.S. War Department to represent all Indians at the dedication of the Tomb of the Unknown Soldier on Armistice Day (now called Veterans Day), 1921. Thousands of Native American men and women had enlisted to serve in the U.S. military during World War I, which ended in 1918. Also attending the ceremony were high-ranking officials from England and France and reporters from the Allied nations.

"KNOWN BUT TO GOD"

In the center of Arlington National Cemetery on a hill overlooking Washington, what was officially called the Tomb of the Unknowns contains the remains of an unidentified World War I soldier. It was built in tribute to the thousands of soldiers who died in battle but could not be identified. Engraved on the tomb are the words: "Here rests in honored glory an American soldier known but to God." In later years, unidentified soldiers from other U.S. wars have been buried in the tomb. The site is guarded 24 hours a day, 365 days a year, by special sentinels chosen from the 3rd U.S. Infantry Regiment, the oldest active-duty U.S. Army unit, dating to 1784.

Plenty Coups's prayer and offerings on the day of dedication were regarded by many in attendance as gestures of peace and reconciliation and were reported as widely as the comments of the president himself. "Taking his war bonnet off and presenting it to an American who he didn't know, that's powerful. That says a lot, and it really ties the Crow Nation to that warrior who's buried on the plaza," Gavin McIlvenna, president of the Society of the Honor Guard for the Tomb of the Unknown Soldier, said on September 4 at the Chief Plenty Coups Day of Honor, an annual event held in Pryor, Montana.

ABOVE: PLENTY COUPS PHOTOGRAPHED 1880 BY CHARLES MILTON BELL. IN: NATIONAL ANTHROPOLOGICAL ARCHIVES, SMITHSONIAN INSTITUTION
OPPOSITE PAGE: U.S. ARMY PHOTOS BY ELIZABETH FRASER / ARLINGTON NATIONAL CEMETERY

HALLOWED GROUND A sentinel from the 3rd U.S. Infantry Regiment (nicknamed "The Old Guard") stands watch over the Tomb of the Unknown Soldier at Arlington National Cemetery. Below: The Chief Plenty Coups flag, a gift to the chief from the U.S. Army to honor the Crow Tribe's service as scouts during the Plains Indian Wars, is based on U.S. military flags flown in the late 1800s. It is one of only two such flags awarded to Indian leaders by the U.S. government. (The other was for the Paiute chief, Winnemucca.) The flag uses the phonetic spelling of Chief Plenty Coups's name. Facing page: The chief at age 32.

AS THE WORLD WATCHED Right: With President Warren G. Harding and dignitaries from England and France, Chief Plenty Coups, age 73, stands at the Tomb of the Unknown Soldier, Arlington National Cemetery, on November 11, 1921. Plenty Coups placed a war bonnet and coup stick—symbols of spiritual power—atop the unknown soldier's casket before offering an impromptu prayer in his native language.

Aaron Brien, Crow tribal historic preservation officer, says the chief may have simply been honoring a fellow soldier. "Plenty Coups was someone who had seen combat, who knew what it was like to face the enemy," he says. Brien explains that the Crow people "place a high value on respecting the dead" and during funeral ceremonies will lay Pendleton blankets and other valuable items on a casket. "So it was not at all surprising that he would place his headdress and coup sticks on the tomb," he says.

SPECIAL FLAG

The U.S. government paid tribute to the chief again years later by presenting him with an official flag bearing his name, one of only two Indian leaders ever to receive such an honor (the other was the Paiute chief, Winnemucca). "He was very proud of it and took it everywhere he went," says GoesAhead. GoesAhead is the fifth person, starting with the chief himself, to have the honor of carrying the flag at Crow celebrations, parades, and other important events. He and the other members of the Chief Plenty Coups Honor Guard will carry flags honoring the United States, the Crow Nation, and the state of Montana at the three-day tomb centennial ceremony.

Counting coups

The word *coup*, of French origin, means a hit, blow, or strike. Among the Plains Indians, a coup in battle involved touching an enemy with a stick, weapon, or hand and was considered the highest act of valor. These courageous acts were tallied after a battle with notches on the warriors' coup sticks, sacred items often decorated with beads, feathers, animals skins, and horse hair.

As a young man, Plenty Coups took part in many raiding parties against other tribes and was renowned for his skill in capturing weapons, tethered horses, and other acts of "counting coups." ■

Chief Plenty Coups's Prayer

November 11, 1921, at the dedication of the Tomb of the Unknown Soldier (translated from the Apsaalooke language):

"I feel it an honor to the red man that he takes part in this great event today because it shows that the thousands of Indians who fought in the Great War are appreciated by the white man. I am glad to represent all the Indians of the United States in placing on the grave of this noble unknown warrior this coup stick and war bonnet, every eagle feather of which represents a deed of valor by my race. I hope that the Great Spirit will grant that these noble warriors have not given up their lives in vain, and that there will be peace to all men hereafter. This is the Indians' hope and prayer."

PHOTOS: NATIONAL PHOTO COMPANY COLLECTION, THE LIBRARY OF CONGRESS

A GREAT DAY Each September, Chief Plenty Coups State Park holds the Day of Honor celebrating the famous Apsáalooke leader and Crow military veterans. Clockwise from top: Elsworth GoesAhead bears the flag of his great-great-granduncle with other members of the Honor Guard; young dancers in traditional Apsáalooke dress pause to listen to an elder speak at the ceremony; the Pryor Mountain Boys perform traditional Crow drumming during the Day of Honor, which includes a craft fair and a free BBQ dinner.

Chief Plenty Coups State Park commemorates the great Apsáalooke warrior and his legacy of harmony and goodwill

A PLACE OF PEACE

Read more about Chief Plenty Coups and the state park that honors him at:
issuu.com/montanaoutdoors/docs/plentycoupssp

The eight-member Honor Guard was established in 1995 to pay tribute to the chief and Crow military veterans. It presents the Chief Plenty Coups flag at the annual Day of Honor, held the Saturday of Labor Day weekend at Chief Plenty Coups State Park, in the tiny town of Pryor, about 30 miles south of Billings on the Crow Indian Reservation.

Before his death in 1932 at age 84, the chief and his wife, Strikes the Iron, donated their home and land from their farm for a memorial to the Crow Nation and a token of what Plenty Coups said was "friendship for all people, both white and red." The site was eventually acquired and is managed by Montana Fish, Wildlife & Parks. In 2001 Plenty Coups's home was designated a National Historic Landmark. The park also contains an interpretive center with interactive Apsáalooke cultural and historical displays. Visitors can hear recordings of Crow elders talking about their history and the significance of Plenty Coups and his homestead to the Apsáalooke people.

The park's biggest event is the annual Day of Honor. Hundreds of visitors and community members gather to pay tribute to Plenty Coups and honor Crow veterans. Festivities include Crow dancing and drumming, a local craft fair, speeches by Crow elders and other dignitaries, and a free BBQ dinner. "The Day of Honor replicates a feast the chief would give at the end of harvest season, free to all comers, where he would talk about important issues of the day," says Aaron Kind, park manager.

HONORING A WARRIOR STATESMAN The war bonnet and coup stick given by Chief Plenty Coups to the Unknown Soldier are on display at the Arlington National Cemetery museum.

After the Washington, D.C. ceremony, the Chief Plenty Coups flag will be placed in a vault in the state park museum that holds the chief's other possessions.

Several weeks before the ceremony, GoesAhead was preparing for his trip to the nation's capital and thinking about his role in the historic event. "I'm trying to get my head around being there representing Plenty Coups before the whole nation," he says. "I'm just a country boy from the tiny town of Pryor."

Chief Plenty Coups Honor Guard members are accepting donations to help cover the cost of visiting Arlington National Cemetery in early November to represent the chief, the Crow Tribe, and Montana. Visit billingscommunityfoundation.org and click the "Donate Now" button.

TIM EVANSON

Chief Plenty Coups State Park receives historic-preservation grant

On September 10, the National Park Service (NPS) announced that Montana Fish, Wildlife & Parks would receive $140,537 to help preserve Chief Plenty Coups's house, designated a National Historic Landmark in 2001.

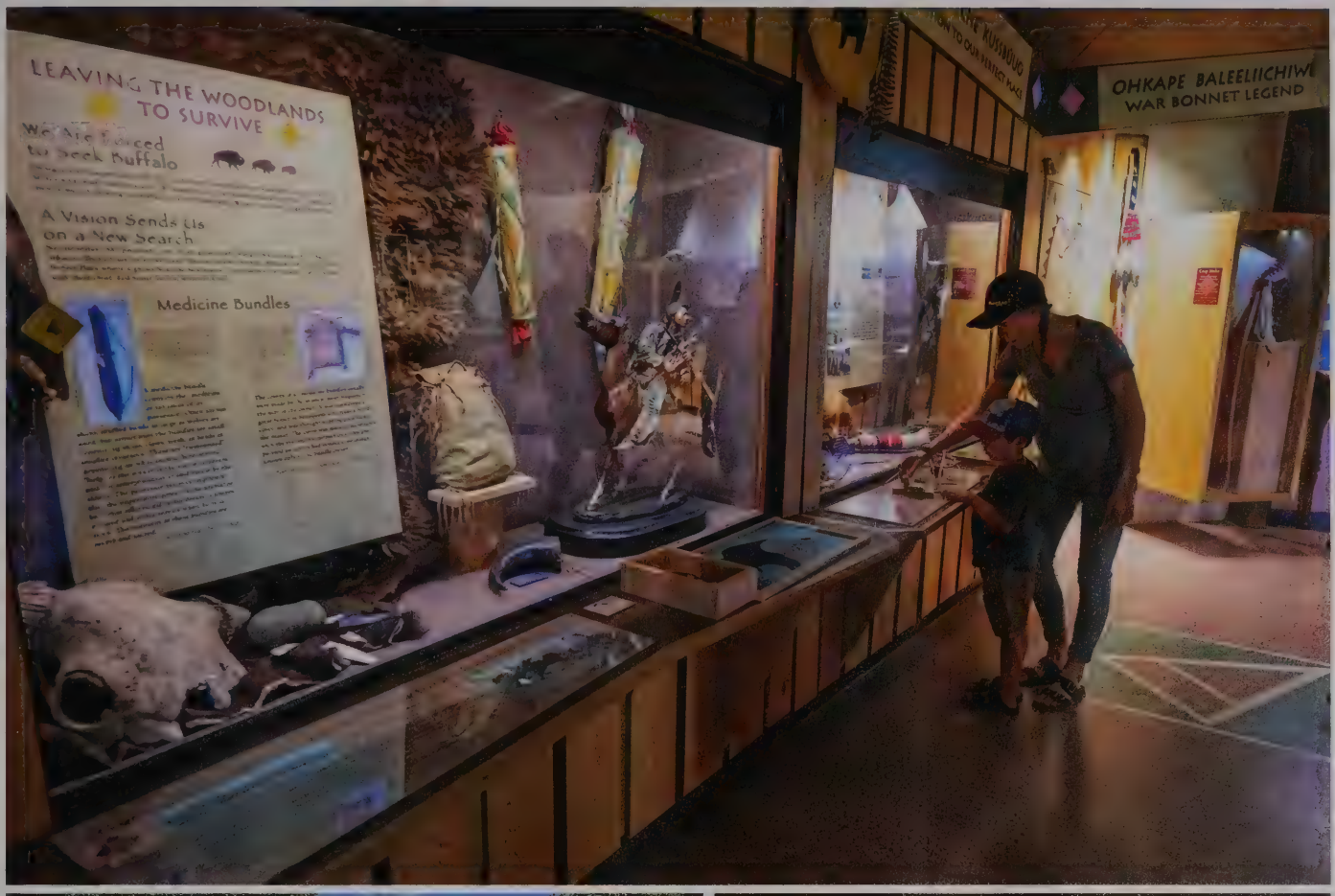
The funding comes from the Save America's Treasures Program, a partnership of the National Park Service, National Endowment for the Arts, National Endowment for the Humanities, and Institute of Museum and Library Services. The program preserves and rehabilitates some of the most significant and iconic American structures and collections. A total of $15.5 million in grants was awarded to help fund 49 projects in 29 states.

SAVE AMERICA'S TREASURES

"This is a much-needed grant for us to help preserve a site of tribal, national, and state significance," says Rachel Reckin, Heritage Resource Program manager for FWP state parks.

Chief Plenty Coups's home, now a state park, was made a National Historic Landmark in 2001.

Reckin says the restoration work, which will begin in 2022, will include foundation repairs, exterior rechinking and redaubing, window rebuilding and reglazing, a survey for rot and repairs, and roof repair and replacement.


LEAVING THE WOODLANDS TO SURVIVE
We Are Forced to Seek Buffalo
A Vision Sends Us on a New Search
Medicine Bundles
OHKAPE BALEELIICHIWI
WAR BONNET LEGEND

VISIT THE STATE PARK

Clockwise from top: In the state park visitor center, displays tell the story of the Crow people's westward movement into today's Montana; a map shows the vast historical Crow territory; the willow frame of a sweat lodge; taking the stairs to the chief's Honor Room where he kept his most important possessions.

Chief Plenty Coups State Park is open daily in summer and Wednesday through Sunday at other times of year. Visit stateparks.mt.gov for more information.

BIG CATS, BIG TERRITORIES

How new DNA technology, spatial science, and computer modeling are helping FWP adjust mountain lion numbers to where Montanans want them.

By Jessianne Castle

Bright beams of light pierce the darkness of the pre-dawn February morning as my husband Ryan and I slowly drive up a logging road through fresh snow. As qualified hound handlers, we've been hired by Montana Fish, Wildlife & Parks to search for mountain lions in the Lolo National Forest near St. Regis.

At daybreak, I spot a trail of round, hand-size indentations crossing the road. We quickly strap tracking collars onto our two scent hounds, Rooster and Bay, and turn them loose. Noses down and tails wagging wildly, the dogs follow the tracks up a mountainside while Ryan and I wait and listen. Soon we hear Rooster's throaty bawl carry through the still air, announcing he's found fresh scent.

Ryan and I race after the dogs, scrambling up steep slopes through the barely lit forest in knee-deep snow. Chasing dogs that are chasing lions is not for the easily winded. Listening to Rooster in the distance, we watch the hounds on the digital map of our GPS unit as they cut straight up a ravine, moving ever more quickly. Finally, five miles after they were let loose, they come to an abrupt stop. The lion is treed.

When we arrive and leash our dogs, the cat is about 30 feet up a tall Douglas fir. Ryan loads a dart gun and fires. The biopsy dart flies into the lion's hip then pops out, dropping to the snow-covered ground below. I retrieve the dart and check the tip to confirm that it contains a tiny pinch of flesh and hair with the lion's DNA. I hold the dart up to let Ryan know that our work here is done.

Except for a temporarily sore rump, the lion is unharmed.

The DNA sample we've secured, along with dozens of others taken by FWP staff and contract workers across this study area

RETURN TO THE KILL A trail camera captures a mountain lion at an elk carcass cached in the snow. New information on lion movement, range, and habitat use allows wildlife biologists to better manage the large carnivores.

in northwestern Montana, will allow biologists to estimate how many mountain lions live in this region. DNA analysis, along with sophisticated computer habitat mapping tools and population modeling, is changing how Montana manages these large and elusive forest carnivores. The new science is providing wildlife biologists with much more accurate estimates of mountain lion abundance and population trends—information they will use to raise or lower lion numbers through hunting harvest to healthy and sustainable levels that will be decided by Montana residents.

NUMBERS UP AND DOWN

In 1989, a mountain lion killed a five-year-old boy 20 miles north of Missoula. A year later, another child was mauled by a cougar in Glacier National Park. Montana homeowners were increasingly reporting lions in their yards.

Were lion numbers rising? It seemed so, based on homeowner reports. And it made sense. For much of the 20th century, Montana had declared war on lions, going so far as to pay a bounty for each one killed. Numbers dwindled to the point that lion sightings, even by hunters pursuing the big cats, were rare. Then in 1971 Montana classified the species as a game animal, giving them protection with regulated hunting seasons and, later, harvest "quotas"—the number of lions that hunters could kill in various hunting districts.

As expected, lion numbers increased. But by the late 1980s, the population appeared to exceed anyone's expectations. Angry and frightened residents demanded that something be done to keep their families safe.

FWP responded by steadily increasing

harvest quotas. The statewide harvest skyrocketed from 159 lions in 1988 to 776 lions in 1998. But then it appeared that FWP had overshot its goal. Toward the end of the 1990s, hound handlers—the men and women who pursue mountain lions with trained scenting dogs—demanded that FWP reduce the annual harvest to increase the population. Wildlife managers tapped the brakes on harvest, eventually dropping the statewide quota to 282 by 2006.

By this time FWP wildlife biologists realized they had to find a better way to manage mountain lions. Using reports from scared people on one hand and angry hound handlers on the other was no way to estimate population trends and establish quotas.

Biologists had some idea of lion numbers. They counted tracks in the snow, collected anecdotal information from deer and elk hunters, responded to livestock depredation reports, and tallied lion harvest data. But that wasn't enough to accurately estimate numbers and trends, which resulted in quotas that were often either too high or too low.

GETTING A HANDLE ON LIONS

Two major mountain lion research projects over the past quarter century have vastly improved FWP's ability to count and thus manage lions. The first was a lion ecology study by since-retired FWP biologist Rich DeSimone that began in 1997. Over nine years, DeSimone's team captured and radio-collared 121 lions in the Garnet Range east of Missoula and recorded more than 46,000 locations of the large forest carnivores. The researchers collected vital information used to manage lions, such as the age when young lions leave their mother. They also found that high hunting harvest can lower lion densities but that these changes are temporary because lions move in from other areas.

> **"With lions, we no longer need to tranquilize and handle the animals, which is a lot easier on them."**

Then, in the 2010s, FWP research biologist Kelly Proffitt led a team that developed a way to estimate lion populations and abundance in the Bitterroot Valley using DNA samples. "It was a big change," says Proffitt. "We went from needing multiple years of animal capture and monitoring information to estimate population size to being able to do that with just three or four months of sampling."

Estimating the abundance of elusive carnivores such as mountain lions has always been a challenge. But with DNA analysis and statistical tools like Spatial Capture-Recapture modeling (see sidebar, page 42), "we can now quickly and efficiently estimate populations," Proffitt says.

These new methods can be used to identify mountain lions, based on their DNA signatures, that biologists and hound handlers may recapture later. Proffitt explains that often the same individuals are sampled multiple times in different places as the lions move around their home ranges throughout the winter. The distances between multiple DNA sampling locations for the same animals is used to estimate the sizes of home ranges for male and female lions. Recapture information is also used to estimate the number of lions in a study area (see sidebar, page 42). And information on recaptures, estimates of population abundance, and correlations with habitat quality in a study area allow biologists to develop estimates of the total number of lions in a broader landscape.

With this new information, wildlife managers can now also quickly understand whether lion populations are growing, declining, or staying stable, and adjust harvest quota recommendations accordingly.

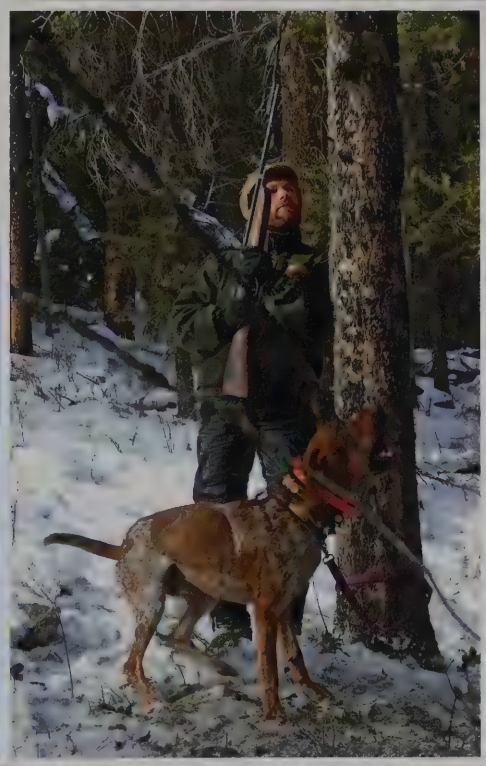
ALL PHOTOS: JESSIANNE CASTLE, EXCEPT FOR CENTER IMAGE. OPPOSITE PAGE: MONTANA FWP

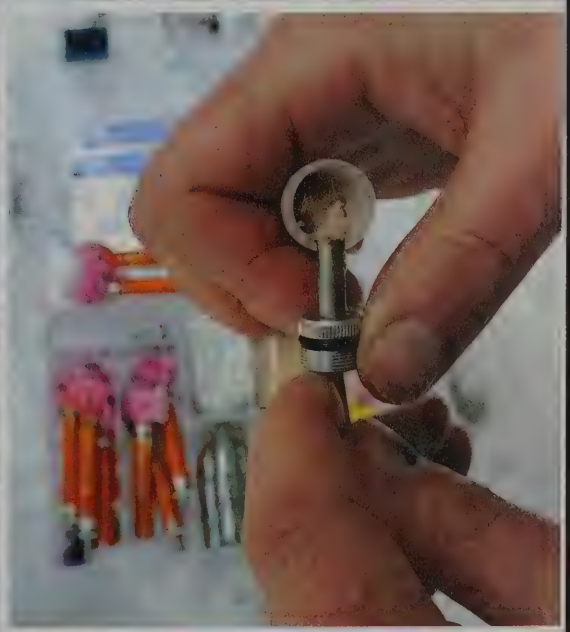
CAT SIGN A hound handler and his dog check lion tracks crossing a logging road before following the prints into the Lolo National Forest near St. Regis. FWP hires handlers for their expertise in finding lions and tracking them with dogs. Right: Hand-size tracks indicate where a lion crossed a log.

THE BIG PICTURE

Jay Kolbe, FWP wildlife biologist in White Sulphur Springs, was the lead author of FWP's comprehensive mountain lion management strategy document, adopted by the Fish and Wildlife Commission in 2019. He says another benefit of DNA technology is that, with lions, "we no longer need to tranquilize and handle the animals, which is a lot easier on them. We can now even identify individual animals just by analyzing the DNA in hair we find in tracks."

Equally important, he adds, is new research conducted by states across the West on the vast distances lions cover and how that affects conservation and management. "One huge lesson we've learned is that we have to be thinking on a much larger spatial scale than we have in the past," Kolbe says. Biologists now know that lions occupy home

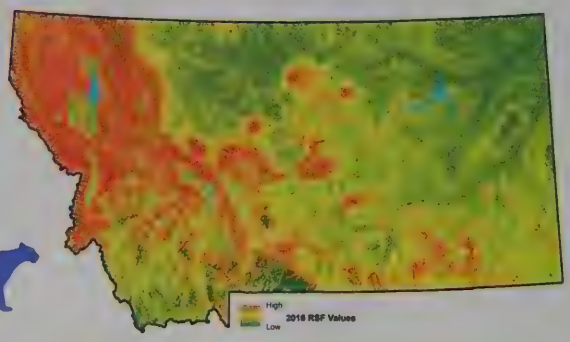


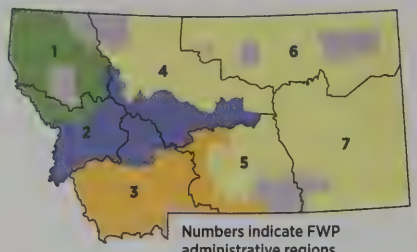


A TINY PIECE OF PUMA Innovations in DNA technology allow wildlife agencies to identify lions without having to tranquilize and handle the animals. Top right: Mountain lions will commonly climb a tree in response to pressure from hounds. Near right: FWP wildlife technician Ben Jimenez waits for a clear shot with a dart gun at a treed lion while a dog keeps the cat from jumping down and running further. Clockwise from far right: A biopsy dart and a CO_2 cartridge used to fire it from a gun; when the dart strikes a lion in the flank, it pops out carrying a small chunk of tissue that is extracted while the cat is allowed to continue on its way, unharmed but for a sore hip; the tissue specimen is marked and then sent to a laboratory, where DNA is extracted and analyzed to identify the lion; scent hounds bay at a treed lion overhead.

MONTANA'S BEST MOUNTAIN LION HABITAT

The lion habitat model at right, showing the range of high-quality to low-quality habitat, is based on where the big cats were found in 10 different research projects. The model determined the four new ecoregions (below) now used for lion management.





Numbers indicate FWP administrative regions.

- Northwest Ecoregion
- West-Central Ecoregion
- Southwest Ecoregion
- Eastern Ecoregion
- Areas not managed by FWP

SOURCE: MONTANA FWP

BILL KINNEY

ranges that often exceed 100 square miles and cover great distances to disperse and find those ranges. When lion numbers decrease in areas of good habitat, such as when FWP increases harvest quotas, that creates a habitat "sink" into which wide-ranging cats from "source" areas settle into.

The upshot of these "source-sink dynamics," Kolbe says, is that efforts to raise or lower lion density in one area (such as a mountain range or a hunting district) will likely be only short term unless similar management actions are applied to the much larger surrounding landscape. "Research has clearly shown us that because mountain lions disperse so readily, to effectively influence lion population trends, management units need to be many thousands of square miles in size."

This is a major change in how FWP manages mountain lions, and it will take time for the public to adapt, Kolbe adds. "Many lion hunters are used to recommending changes to harvest quotas for only their local area. Now, people interested in lion management—hunters, wildlife enthusiasts, biologists, and members of the Fish and Wildlife Commission—will need to think about population objectives that affect one of the four statewide lion 'ecoregions,'" he says.

The ecoregions, on which much of FWP's new mountain lion management strategy is based, were drawn to include large areas of similar-quality habitat. Montana's best lion habitat is in the northwest, where dense conifer forests support abundant white-tailed deer; the lowest-quality habitat is in eastern Montana's open grasslands and sagebrush. Based on habitat differences, managers divided the state into distinct ecoregions—Northwest, West-Central, Southwest, and Eastern—that have unique environmental factors contributing to habitat quality and ultimately support different densities of cats.

"We let lions themselves tell us where the ecoregion boundaries should be," Kolbe says. He explains that FWP staff and Hugh Robinson, director of applied science for the international wild cat conservation organization Panthera, worked together to build a statewide computer habitat model using thousands of lion location points collected as part of 10 different research projects in Montana and Yellowstone National Park. "When we compared the habitat model to where lions were actually harvested, it performed very well" in predicting where lions will and won't be, Kolbe adds.

FWP is now managing lions on a landscape scale based on the animals' biology rather than on the smaller hunting districts used for other big game species. "The department is managing lions using more complex science than we are for any other big game species," says FWP northwestern region supervisor Jim Williams, who has studied lion conservation in Montana, Chile, and Argentina over the past three decades and is the author of *The Path of the Puma.*

PARTNERS IN RESEARCH

Using its newly adopted management strategy, FWP set out in December 2019 to collect field data to help build an estimate of the number of mountain lions in the Northwest Ecoregion. That winter, a team of hound handlers collected DNA samples from a monitoring area south of Libby. The following winter, they collected samples from another monitoring area around St. Regis.

"This project is one of those unique opportunities to involve the public in mountain lion research," Williams says. "There's no

Jessianne Castle is a writer who lives west of the Flathead Valley.

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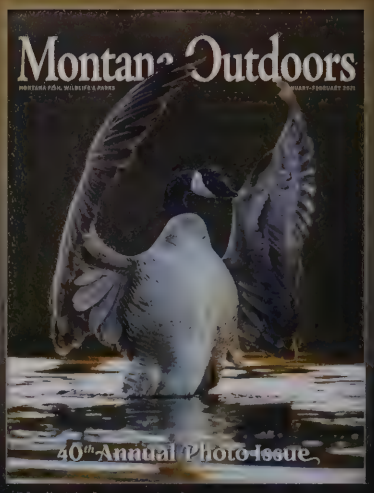

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COMEBACK CAT In Montana and throughout the West, mountain lions were subject to indiscriminate killing during much of the 20th century. After they were declared a game species in Montana in 1971 and harvest was regulated, lion numbers steadily increased.

> **To effectively influence lion population trends, management units need to be many thousands of square miles in size.**

way we could do any of this research or management without the help of hounds specially trained to pursue and tree a mountain lion so that we can obtain DNA samples."

Molly Parks, FWP mountain lion monitoring technician, coordinates the sample collecting. Throughout the winter, she assigns hound handlers to randomly selected "cells" within the survey area. At winter's end, Parks sends the DNA samples to a lab in Idaho, where geneticists identify how many individual lions were detected and how many were treed more than once. These results, along with capture locations and the habitat model, are later used to develop a population density estimate using the Spatial Capture-Recapture (SCR) sampling method (see sidebar, page 42).

"The estimates we produce using the SCR method are far more accurate than what's been reported in the past," Kolbe says. Previously, when managers wanted to estimate the number of lions in an area, they tried to radio-collar every lion living there. But because so many members of any lion population are wide-ranging teenagers, that approach usually missed many of the cats available for harvest. "We've almost certainly underestimated densities using that older method," Kolbe says.

After conducting field surveys during two winter seasons, FWP estimates that roughly 1,400 adult mountain lions inhabit the Northwest Ecoregion. Over the next two winters, the department will survey the West-Central Ecoregion, followed by two years in the Southwest. Given its lesser-quality habitat and lower overall harvest, the state is not managing the Eastern Ecoregion with the same monitoring strategy. Field crews will return to the Northwest Ecoregion in December 2025, to resume monitoring, and will do similar six-year rotations for the other two surveyed ecoregions.

MONTANANS DECIDE

After FWP estimates the lion population and density estimate for an ecoregion—data it plans to release every two years—the information is added to what's called an Integrated Population Model, or IPM (see sidebar, below). Scientists can then input various possible harvest numbers to project how a lion population would respond.

"IPM is a new tool that allows us to take all the pieces of information we have on any big game species, make a prediction regarding harvest, weather, breeding probability, litter size, and other factors, and then see what will happen to a population," says Brian Wakeling, chief of the FWP Wildlife Game Management Bureau. "We can then adapt our population models and resulting management recommendations as new information comes in."

While all this science is essential to managing lions, it can't answer the question of how many lions *should* live in each ecoregion. That's for Montanans to decide.

> **"We've almost certainly underestimated mountain lion densities using that older method."**

FWP recently formed the Northwest Lion Ecoregional Population Committee to grapple with this challenge. Composed of hound handlers, hunting outfitters, elk and deer hunters, livestock producers, and regional residents, the citizen advisory panel will meet this winter to discuss lion numbers and how the big cats affect the region's people, businesses, ungulate populations, and other communities. Committee members will also discuss how harvest might be distributed over the entire region to address as many concerns as possible. With input from the committee, FWP will make recommendations to the Fish and Wildlife Commission on northwestern Montana hunting seasons and quotas in the spring of 2022. The commission makes the final decision.

When field crews return to the Northwest Ecoregion in 2025 to gather new population and density information, FWP wildlife managers will be able to see if harvest strategies adopted by the commission affected the lion population as models predicted. At that time, the citizen lion committee can recommend new management direction and the cycle will begin again. The department plans to use this same approach in the other ecoregions.

Montana is a state with enough wild habitat and abundant prey to support healthy and widespread mountain lion populations. But at what size? FWP now has the tools to accurately raise or lower lion populations. But it's up to Montanans themselves to reach agreement on how big or small those populations should be.

Three tools for mountain lion management

Wildlife managers use these tools to estimate mountain lion populations and recommend harvest quotas to the Fish and Wildlife Commission:

1. RESOURCE SELECTION FUNCTION

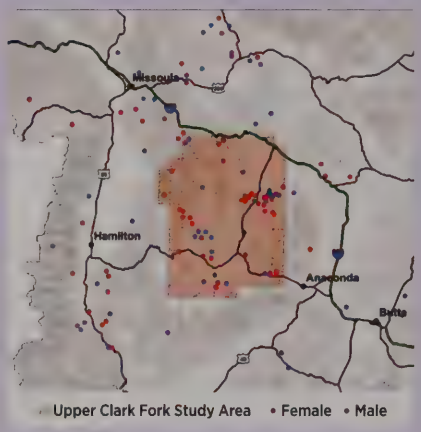
The Resource Selection Function (RSF) model predicts lion presence based on habitat features. It can be represented as habitat maps or used as a statistical model. FWP used this tool to divide the state into four mountain lion ecoregions. Each has different levels of lion habitat quality and prey types able to support specific densities of mountain lions.

2. SPATIAL CAPTURE-RECAPTURE

The Spatial Capture-Recapture (SCR) model is a modern refinement of the classic way of estimating wildlife populations. For decades, biologists have captured animals, tagged them, then noted the percent of tagged animals that are later recaptured.

Think of it this way: You're given a bag of beans and need to estimate how many are in the bag. You pull out a handful of beans, mark each one with an X, and return them to the bag. After giving the bag a shake, you pull out another handful of beans. Comparing the number of beans marked with Xs with the total number of beans in your second handful allows you to, based on the number you originally marked with Xs, figure out the total number of beans in the bag.

When contracted hound handlers collect DNA samples from mountain lions in a specific search area, it is the same principle as marking beans with an X.



A SCR sampling area and the locations of 132 mountain lion tissue samples from which DNA was extracted and analyzed to determine individual identification.

The spatial component of this tool involves combining each DNA sample with a GPS location to factor in where on the landscape initial and subsequent captures occur. Based on the probability that a lion would be captured in various habitats—high probability in prime habitats and low in marginal areas—scientists can even more accurately estimate the total number of lions in a search area.

3. INTEGRATED POPULATION MODEL

The Integrated Population Model (IPM) combines density estimates using the SCR method with mountain lion vital rates (such as survival and reproduction rates) derived from research and monitoring projects in Montana and across the West. When biologists recommend harvest quotas to the Fish and Wildlife Commission, they can input those proposed numbers into the IPM and see how the harvest would affect mountain lion densities in each ecoregion over time. This will help the commission factor in whether the public wants more or fewer mountain lions in a particular area when it makes its decisions.

With the addition of new density estimates after each field season, the IPM will also show if an ecoregion's population is trending up or down and could give biologists a sense of the overall status of a region's mountain lion population.

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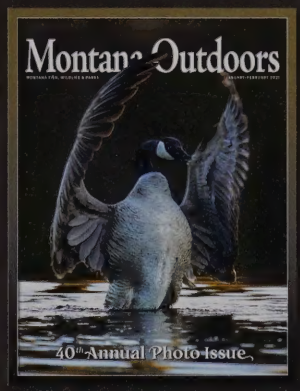

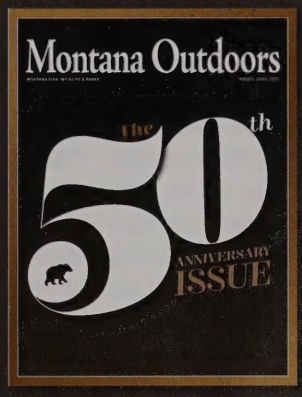

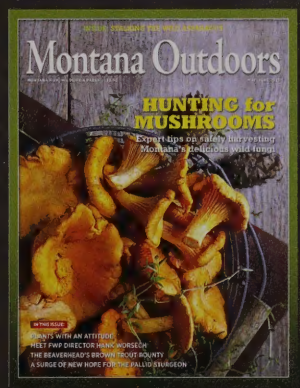

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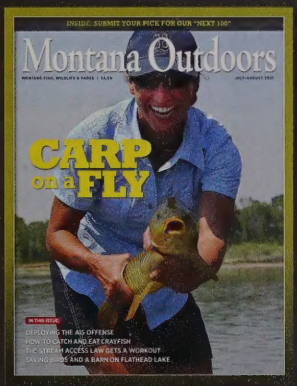

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From Warrior to Warrior Crow leader Chief Plenty Coups will be among those honored in November at the centennial of the dedication of the Tomb of the Unknown Soldier. By Tom Dickson

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Restraint

By Tom Dickson

One evening this past summer I came face to face—actually, face to backside—with a striped skunk. I was taking out a bag of trash and looked down to see it 10 feet away, tail straight up, ready to blast me with a load of stinkshot.

But it didn't. After I froze, the skunk looked over its shoulder and, apparently sensing no threat, dropped its tail and waddled across the street to the neighbor's hedge.

It's curious how often wildlife can harm us but don't. A few weeks earlier, I was walking back to my car after fishing the Missouri River near Craig. I heard the unmistakable sound of a rattlesnake and saw, just a fly rod length away, a coiled prairie rattler on the trail. I veered far around it, my heart pounding from the realization that, had the snake not given us a warning, I or my dog, who follows at heel, could have been bitten.

Or maybe not. I've since talked to several people who, while out hiking or hunting, encountered a rattler well within striking distance that chose not to strike.

What I've long thought were lucky breaks I now see as animals deciding not to do their worst. Once while fishing a backcountry creek in Yellowstone National Park, I nearly bumped into a cow moose with a calf behind her. She snorted and backed away, but just as easily—and certainly justifiably—could have charged me with hooves flailing. A few years ago when my wife and I were backpacking in the Bob Marshall Wilderness, we broke camp one morning and I noticed fresh grizzly tracks from the night before. The bear had been following the trail, then moved off when it neared our site. But for the tracks, we'd never have known that the large carnivore had been only a few dozen yards from our tent.

The most remarkable episode of animal restraint I ever witnessed took place one late afternoon in Yellowstone when I and several FWP colleagues in a van reached the high bridge that crosses the Gardner River southeast of Mammoth Hot Springs. A female black bear and her three cubs had tried crossing the bridge and were surrounded by tourists taking their photos. When other tourists appeared on the far side of the bridge, the mother bear decided to gather her young and turn back—into the pursuing crowd. The park ranger at the scene yelled at the photographers, urging them to move quickly so they would not end up between the bear and her cubs.

"It was the most dangerous situation I've ever seen," the ranger said to us afterward. The mother bear wasn't especially large, but she no doubt felt some threat to her young. Even more perilous was the site of the incident: a high bridge with low side railings. If the bear had even bluff-charged any of the people near the railings, they might have fallen or even jumped off, plunging into the boulder-strewn river several hundred feet below. Watching the scene unfold, those of us in the van held our breath, save for a videographer colleague who sensed a teaching moment worth capturing and jumped out to film a few minutes of the melee (see YouTube link below).

Fortunately, no one was injured. Mom got her cubs off the bridge and the tourists returned to their vehicles and drove off with a harrowing story to tell friends back home.

That mother bear and other human-tolerant wildlife have been on my mind lately as I think about how eroding standards of social discourse have made it increasingly easy for people to harm other people. With a cruel Tweet, spiteful Facebook comment, or cyberbully attack, anyone with a grudge or grievance can lash out and inflict lasting damage to others from the safety of their bedroom or basement. Maybe we could learn a thing or two from all the dangerous animals that so rarely harm us even though they can. If a mama black bear with cubs surrounded by tourists can refrain from attacking people, it shouldn't be so hard for us to do the same.

See footage of some of the YNP bridge incident at youtu.be/5OrnHISGqi0.

Tom Dickson is the editor of Montana Outdoors.

ILLUSTRATION BY STAN FELLOWS

Rough-legged Hawk

Buteo lagopus

By Jim Pashby

When our kids were young and we'd drive across central Montana to visit their grandparents at Thanksgiving and Christmas, we'd inevitably see raptors in the sky.

"Rough-legged hawk," I'd always say, even when the raptor was just a tiny speck in the sky.

"Dad, how can you see what bird it is when it's so far away?" they would ask.

"Kids, your father has eagle eyes," my wife would explain.

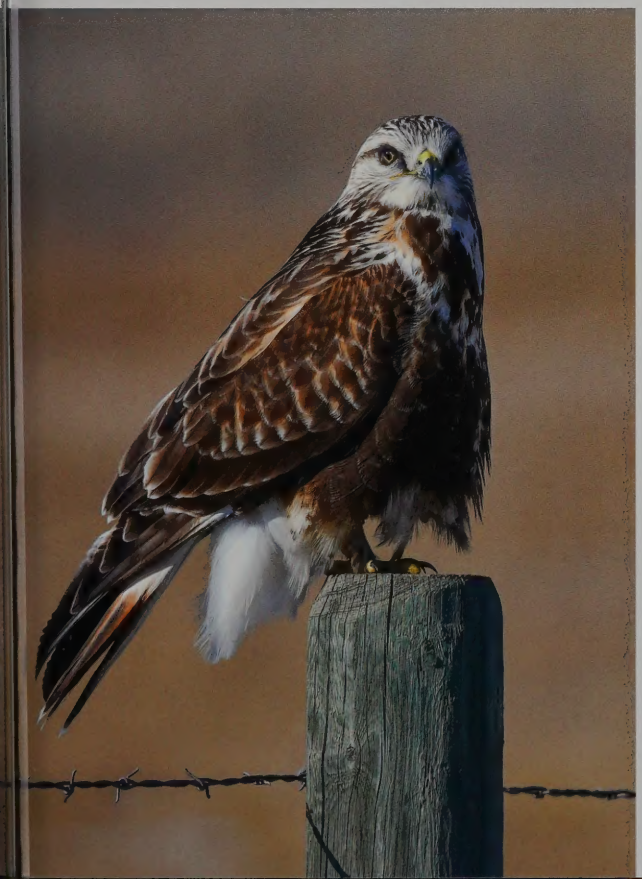
It wasn't until years later that they learned that their father was just playing the odds: Almost every raptor you see in eastern and central Montana during the winter is a rough-legged hawk.

IDENTIFICATION

Rough-legged hawks are large raptors with a big head, long wings, dark tail band, and a dark belly. The easiest way to identify them is by the square brown "wrist" patch on the pale underside of each wing. Rough-leggeds also have a white rump patch, visible when the bird is flying low, that looks a bit like the rump patch on a northern harrier.

When perched, rough-leggeds are sometimes mistaken for red-tailed hawks because both have a broad brown chest band between a light upper chest and belly. But if you can get closer to a perched bird, you'll see that a rough-legged has a small beak and small feet, with legs feathered down to the toes.

The reason rough-leggeds are so prevalent in winter is that most other grassland raptors—including ferruginous and Swainson's hawks—migrate south from Montana during the cold months.



RANGE AND HABITAT

Rough-legged hawks spend summers in the Arctic and Alaska, where they feed almost entirely on lemmings. In winter they head south to southern Canada and most of the contiguous United States, including Montana. They arrive in mid-October and are mostly gone by late April.

Rough-legged hawks stick to open country. In the Arctic tundra, they nest on cliffs next to open areas. In Montana they are almost always seen flying over or perched near grasslands, shrublands, and pastures.

BEHAVIOR

In winter, rough-legged hawks feed mostly on meadow voles. Because they frequent open areas with few perches, they often hover over fields, looking like an oversize kestrel. When they do perch, it's almost always on a power line or small tree limb because their feet are so small. Their feet (and beak) are small because they feed on small mammals and don't need the big talons and beaks of raptors that prey on jackrabbits, cottontails, and other similar-size mammals.

CONSERVATION

Numbers of this species vary considerably from year to year based on lemming and vole populations, which also vary widely. The species doesn't appear to be in trouble anywhere within its range, though in some places, including Montana, rough-leggeds are occasionally and illegally shot for "sport," according to Buteo Books' *Birds of Montana*. One biologist who surveyed the Mission Valley for two winters in the late 1990s found 42 rough-legged hawks that had been shot.

Jim Pashby is a writer in Helena.

SCIENTIFIC NAME *Buteo* is Latin for "buzzard," a common European raptor, and *lagopus* is derived from the Greek *lagos*, meaning "hare," and *pous*, meaning "foot." The name is odd because rough-legged hawks have distinctively small feet that could never grasp, much less kill, an adult hare or rabbit.

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Whether it's by hunting, fishing, camping, boating, mountain biking, hiking, wildlife watching, or **snowmobiling in the Flathead National Forest,** Montana is a state where everyone can find their own special way to connect with the natural world. Around here, **the outside is in us all.** PHOTO BY CHUCK HANEY

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